

STATE OF MAINE
PUBLIC UTILITIES COMMISSION

Docket No. 97-505

MAINE PUBLIC UTILITIES COMMISSION
Investigation of Total Element Long-Run
Incremental Cost (TELRIC) Studies and
Pricing of Unbundled Network Elements

EXAMINERS' REPORT

January 18, 2002

NOTE: This Report contains the recommendation of the Hearing Examiner. Although it is in the form of a draft of a Commission Order, it does not constitute Commission action. Parties may file responses or exceptions to this Report on or before **January 27, 2002**. It is expected that the Commission will consider this report at its deliberative session on **February 4, 2002**.

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LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|-------------|--|
| ADSL | Asymmetric Digital Subscriber Line |
| AFOR | Alternative Form of Regulation |
| AIN | Advanced Intelligent Network |
| BA | Bell Atlantic |
| Br. | Brief |
| CAPM | Capital Asset Pricing Model |
| CFR | Code of Federal Regulations |
| CLASS | Custom Local Area Signaling Service |
| CLEC | Competitive Local Exchange Carrier |
| CSA | Carrier Serving Area |
| DCF | Discounted Cash Flow |
| DLC | Digital Loop Carrier |
| DTE or MDTE | Massachusetts Department of Telecommunications and Energy |
| EEL | Enhanced Extended Loop |
| Exh. | Exhibit |
| FCC | Federal Communications Commission |
| FDI | Feeder Distribution Interface |
| GAAP | Generally Accepted Accounting Principles |
| GTE | General Telephone and Electronics |
| GW | Great Works Internet |

| | |
|------------------------------|--|
| High Cost Order | Tenth Report and Order, CC Docket No 96-45 <u>Federal-State Joint Board on Universal Service</u> , and CC Docket No 97-160 <u>Forward-Looking Mechanism for High Cost Support for Non-Rural LECs</u> , released November 2, 1999 |
| HUNE | High-frequency spectrum Unbundled Network Element |
| I/B/E/S | Institutional Brokers' Estimate System |
| I-Factor | Inflation (standard price cap formula) |
| ILEC | Incumbent Local Exchange Carriers |
| IOF | Interoffice Facilities |
| Iowa I | 120 F.3d 753 (8 th Cir. 1997) |
| Iowa II | 525 U.S. 366 (1999) |
| Iowa III | 219 F.3d 744 (8 th Cir. 2000) |
| LCO | Local Competition Order |
| LEC | Local Exchange Carrier |
| Line Sharing Order | <u>In the Matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability And Implementation of the Local Competition Provisions of the Telecommunications Act of 1996</u> . Third Report and Order CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, (Dec. 9, 1999). |
| Line Sharing Reconsideration | <u>In the Matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996</u> , Third Report and Order on Reconsideration, CC Docket No. 98-147; Fourth Report and Order on |

Reconsideration, CC Docket No. 96-98;
 Third Further Notice of Proposed
 Rulemaking, CC Docket No. 98-147;
 Sixth Further Notice of Proposed
 Rulemaking, CC Docket

| | |
|-------------------------|---|
| Local Competition Order | <u>In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996</u> , CC Docket No. 96-98 (August 8, 1996). |
| LTD | Long-Term Debt |
| Mid-Maine | Mid-Maine Tel-Plus |
| NID | Network Interface Device |
| NRC | Non-Recurring Cost |
| OPA | Office of the Public Advocate |
| OSS | Operational Support System |
| POP | Point of Presence |
| Pref. Dir. | Pre-filed Direct testimony |
| Pref. Reb. | Pre-filed Rebuttal testimony |
| Pref. Surr. | Pre-filed Surrebuttal testimony |
| PSC | Public Service Commission |
| PUC | Public Utilities Commission |
| Q-Factor | Service quality (standard price cap formula) |
| RBOC | Regional Bell Operating Company |
| RUS | Rural Utility Service |
| S & P | Standard & Poor's |
| SBC | Southwestern Bell Corporation |

| | |
|------------------------|--|
| SCIS | Switching Cost Information System |
| SME | Subject Matter Expert |
| SWBT | Southwestern Bell Telephone |
| TelAct | Telecommunications Act of 1996 |
| TELRIC | Total Element Long-Run Incremental Costs |
| TFI | Technology Futures, Inc. |
| Tr. | Transcript |
| UNE | Unbundled Network Element |
| UNE-P | Unbundled Network Element – Platform |
| USF | Universal Service Fund |
| Vermont Phase II Order | <u>Investigation into New England Telephone and Telegraph Company's (NET's) tariff filing re: Open Network Architecture, including the unbundling of NET's network, expanded interconnection, and intelligent networks in re: Phase II, Module 2 – Cost Studies</u> Vermont Public Service Board, Docket No.5713, (Feb. 4, 2000). |
| WACC | Weighted Average Cost of Capital |
| xDSL | Digital Subscriber Line |
| X-Factor | Increases in productivity in the telecommunications industry (standard price cap formula) |
| Z-Factor | Exogenous event (standard price cap formula) |

I. INTRODUCTION

On August 7, 1997, the Commission opened this proceeding to investigate the total element long-run incremental cost (TELRIC) of Bell Atlantic-Maine, now Verizon-Maine, of providing unbundled network elements (UNEs) and interconnection pursuant to the requirements of the Telecommunications Act of 1996 (TelAct).

II. SUMMARY

In this Order, we adopt three major sets of rates for Verizon. First, we adopt recurring rates for each of Verizon's UNEs. Recurring rates are the charges for the actual UNE that is being purchased by the competitive local exchange carrier (CLEC). Recurring rates are usually based upon time intervals (a monthly rate for the use of a switch) or upon the number of units ordered (a rate for each loop). The vast majority of recurring rates relate to various forms of loops, switching and transport. Second, we adopt non-recurring rates -- the one-time charges which recover the costs of Verizon to process a CLEC order or otherwise provision a UNE. Third, we adopt rates for collocation -- the placement of CLEC equipment in an ILEC's facility for the purpose of interconnection and access to UNEs.

In addition to setting the rates described above, we find that Verizon has failed to meet its burden of proof with regard to proposed charges relating to the costs of its Operation Support Systems (OSS) and thus deny recovery of those costs at this time.

III. THE PARTIES

Verizon-Maine was named as a party in the Commission's Order opening this docket. Additionally, the following parties petitioned for and were granted intervention into this proceeding: AT&T Communications of New England (AT&T), Worldcom, Office of the Public Advocate (OPA), the Telephone Association of Maine (TAM), Mid-Maine TelPlus (Mid-Maine), and Great Works Internet (GWI). OPA and GWI did not actively participate in the case.

IV. PROCEDURAL HISTORY

A detailed description of the procedural history of this proceeding is attached. (See Attachment A.)

V. TELRIC METHODOLOGY

One of the central issues of this case is how the Commission will interpret and apply the Federal Communications Commission's (FCC) TELRIC standard. This determination will directly impact almost every other decision made in this case on both cost and non-cost issues.

A. Background

The Telecommunications Act of 1996 (TelAct)¹ was the first comprehensive national telecommunications legislation to be passed since 1934. It fundamentally changed the telecommunications industry by opening the local exchange market to competition through the imposition of new duties and

¹Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, *codified* at 47 U.S.C. §§ 151 *et seq.*

responsibilities on telephone carriers. Since February 1996, the FCC has initiated several rulemakings to implement various sections of the TelAct.

On August 8, 1996, the FCC issued its First Report and Order (Local Competition Order or LCO)² relating to implementation of the local competition provisions of the TelAct. The LCO contained specific rules relating to local competition, including rules relating to the UNE prices that incumbent local exchange carriers (ILECs) could impose on competitive local exchange carriers (CLECs). Specifically, the FCC established the TELRIC method for pricing UNEs. Under the TELRIC methodology, UNE prices are calculated by estimating the forward-looking, long-run incremental costs of providing the entire quantity of the network element.³

The TELRIC of an element has three components: operating expenses; depreciation cost; and an appropriate risk-adjusted cost of capital. The methodology also allows for recovery of a reasonable measure of common costs.⁴ The aim of a TELRIC study is to replicate costs and prices in a way which "simulates the condition in a competitive environment."⁵ "In dynamic competitive markets, firms take action based not on embedded costs, but on the relationship between market-determined prices and forward-looking economic

²See In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC Docket No. 96-98 (August 8, 1996).

³LCO at ¶ 677.

⁴LCO at ¶ 679.

⁵LCO at ¶ 620.

costs."⁶ The FCC's TELRIC methodology assumes that switches will be placed at the ILEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable long-run capacity requirements.

The unit cost of providing a network element is derived "by dividing the total cost associated with the element by a reasonable projection of the total usage of the element."⁷ Under the FCC's rules, state commissions must follow the TELRIC methodology when establishing UNE rates. Because a TELRIC cost estimate is required to be forward-looking, the ILEC is not entitled to recover its historic, embedded costs.⁸ Under TELRIC, the ILEC must be presumed to use the most efficient technology that is "currently available."

Many parties appealed the FCC's TELRIC rules. The appeals were consolidated in the Eighth Circuit Court of Appeals and a decision was issued in 1997 (*Iowa I*).⁹ The Eighth Circuit held that the FCC lacked jurisdiction to promulgate pricing rules under the TelAct.¹⁰ Having reached that decision, the Court declined to address the merits of the rules themselves.¹¹

⁶LCO at ¶ 694.

⁷LCO at ¶ 677.

⁸LCO at ¶ 683.

⁹Iowa Util. Bd. v. FCC, 120 F.3d 753 (8th Cir. 1997)

¹⁰Id. at 794.

¹¹Id. at 800.

The Eighth Circuit's decision was appealed to the Supreme Court, which issued a decision in 1999 (*Iowa II*).¹² The Supreme Court held that the FCC did have jurisdiction to promulgate rules relating to pricing and remanded the case back to the Eighth Circuit for proceedings consistent with the Supreme Court's Order.¹³

In June 2000, the Eighth Circuit issued its second decision (*Iowa III*).¹⁴ In that decision, the Eighth Circuit vacated the FCC's pricing rules and remanded the case back to the FCC for further proceedings consistent with its finding.¹⁵ Specifically, the Eighth Circuit found that Congress intended that ILECs be allowed to recover the "real costs" of providing interconnection and UNEs and not costs based on a hypothetical network using the most efficient technology available.¹⁶ The Court found that Congress expected competitors to pay rates for the existing network and the required additions to it, not a reconstructed network as required by the FCC's TELRIC principles.¹⁷ The Court, however, also found that the costs allowed by Congress did not necessarily require use of historical costs and that a forward-looking methodology could be used.¹⁸ In summary, the Court stated:

¹²AT&T v. Iowa Util. Bd., 525 U.S. 366 (1999).

¹³Id. at 724-725.

¹⁴Iowa Util. Bd. v. FCC, 219 F.3d 744 (8th Cir. 2000)

¹⁵Id. at 751.

¹⁶Id. at 750.

¹⁷Id.

¹⁸Id. at 751.

We reiterate that a forward-looking cost calculation methodology that is based on the incremental costs that an ILEC actually incurs or will incur in providing the interconnection to its network or the unbundled access to its specific network elements requested by a competitor will produce rates that comply with the statutory requirement of § 252(d)(1) that an ILEC recover its “cost” of providing the shared item.¹⁹

The Eighth Circuit immediately stayed the implementation of its decision so that the parties could appeal the decision to the Supreme Court, which they have.

The Supreme Court has since agreed to hear the case, briefs have been filed, and oral arguments heard. A decision in the case is not expected until later this year.

B. Positions of the Parties

Verizon. Verizon contends that its cost studies comply with the FCC’s TELRIC standard. Verizon states that the “entire present demand of each network element is assumed” and that costs are based on existing wire-center locations and the most economically efficient technology currently deployed and planned.²⁰ Thus, Verizon ultimately argues that *Iowa III* affirmed its position that the costs studies it submitted in this proceeding (which did not assume a hypothetical network) comply with the TELRIC standard.

AT&T. AT&T has argued, and continues to argue, that the FCC’s standard should be strictly applied. According to AT&T, TELRIC requires that UNE costs “be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network

¹⁹Id. at 752.

²⁰Verizon Initial Br. at 3.

configuration, given the existing location of the incumbent LEC's wire centers," which some have termed a "hypothetical network."²¹ Further, AT&T argues that the Commission cannot consider any of Verizon's embedded costs. Finally, AT&T avers that whereas TELRIC requires one to assume that all aspects of the network are variable, with the exception of switch locations, Verizon's cost studies must be found to be in violation of the FCC's pricing rules because they assume a configuration based upon the current network.

C. Analysis

1. TELRIC Standard

The Commission must take into consideration all of the varying standards and legal decisions promulgated by the FCC and the courts in reaching its determination regarding the pricing standard to be applied in this proceeding. It must also account for public policy considerations including the TelAct's promotion of competition in the local exchange markets and state policies encouraging economic development and consumer interests.

All parties, the FCC, and the courts appear to agree that application of a TELRIC standard is appropriate in setting an ILEC's UNE rates. The disagreement lies in how to interpret the TELRIC standard. The FCC's TELRIC rules, which appear closer to the interpretation suggested by AT&T, have been overturned in a decision that would appear to support the interpretation suggested by Verizon, but that decision has been stayed awaiting an opinion from the Supreme Court. If the Supreme Court overturns the Eighth Circuit, the FCC's TELRIC standard will be the law of the land; if it upholds the

²¹ AT&T Initial Br. at 5.

Eighth Circuit, a new standard will apply and the FCC will be required to develop new rules to implement that standard.

At this time, we believe the most prudent course of action is to heed the language of the TelAct itself as well as the general standards agreed to by all relevant parties. Specifically, section 251(c) and 252(d) state that ILECs must make UNEs and interconnection available “on rates, terms, and conditions that are just, reasonable, and nondiscriminatory” and that such rates be based on “the cost of providing the interconnection or the network element.” In addition, as all parties agree, we find that TELRIC is a forward-looking analysis that does not include the use of the ILEC’s historic costs in calculating costs.

2. Establishing Prices in this Proceeding

Throughout the country, the establishment of UNE prices under the FCC’s TELRIC standard has followed a tortured path. There have been sharp disagreements among the parties, and among the state commissions resolving disputes among the parties, as to how TELRIC ought to be applied, and with respect to virtually all of the data used as input to the TELRIC models. As noted above, there have been persistent and continuing national debates about the nature of the TELRIC standard itself, and the elements to which it should be applied. It is clear, now, that our decision to suspend this proceeding while waiting for the “bugs” to be removed from the FCC’s universal service cost model (which was originally intended to reflect TELRIC principles) and the legal issues

surrounding the use of that model to be resolved, was based on an altogether too optimistic view of just how long that process would take.²²

Against this backdrop, seeking to find the exact economically correct price for each UNE in Maine would be a futile exercise even with a full record based on recent data. In this case, however, the data is already years old, Verizon is unable to locate some of the models used to produce the prices it has proposed,²³ and AT&T, the only other sponsor of a model that might produce prices, has withdrawn the model from this proceeding.

One response to this state of affairs might be to abandon this docket and start over. It is not obvious, however, that the search for greater accuracy in applying the TELRIC standard – which may, once the currently unresolved legal and technical issues are resolved, indeed provide more economically appropriate pricing for a competitive telecommunications market – must be undertaken before this commission can adopt a full set of “permanent” UNE prices. There is value to having in place prices that are within a zone of reasonableness, even if the exact placement within that zone is not currently knowable, to gain experience in the investment and competitive implications of the full set of UNE prices.

Thus while it is tempting to avoid putting forward any set of UNE rates until that greater (but false) precision is achieved, we reject that course. Instead, we believe that it will best serve the public interest, and interests of all the parties in this case, to establish UNE rates that fall into a zone

²²See Procedural History, Attachment A.

²³Id. (Procedural Order of Jan. 7, 2002)

of reasonableness when compared to rates found in other states (see discussion below) and reflect, to the extent we have identified important methodological errors in the development of the rates proposed by Verizon, discounts from the Verizon rates that reasonably estimate the value of error.

Verizon requires reasonably compensatory but in any case "permanent" and comprehensive UNE rates in order to move forward with its application to the FCC for interLATA entry. The CLECs need rates that have at least the prospect of allowing entry and provide some degree of stability moving forward. We believe that the method of setting rates we have chosen here, coupled with our commitment in the relatively near term to revisit the UNE rates based on more recent cost studies and with the benefit of at least some further clarification of the legal issues surrounding TELRIC at the national level, will provide what these parties need (if not necessarily what they want).

We have, therefore, developed the prices we propose in this order as follows:

First, we have analyzed the method by which Verizon calculated its proposed prices, and have described the deficiencies in that method where appropriate. We have also discussed (and accepted or rejected, as appropriate) the critiques voiced by other parties with respect to Verizon's calculations.

Second, we have identified the major UNE elements to which our critique of Verizon's calculations applies. For some of those elements, we have recalculated the price using Verizon's methodology and data corrected

for the errors we have identified. For others, we have noted that, because of the errors, some discount off the Verizon proposed rate is appropriate.

Where we have not "recalculated" the UNE rate, we have compared the Verizon-Maine rate with the UNE rates found in other Verizon jurisdictions (in particular Vermont, Massachusetts, and Rhode Island). The rates found in those other jurisdictions, not surprisingly, cover a relatively broad range. We have, therefore, taken a simple average of the New England jurisdictions' rates, and have adjusted Verizon-Maine's rates to that average level. While this may seem exceptionally "rough" justice, the resulting rates have the virtue of falling (by definition) well within the range found reasonable elsewhere (and confirmed as generally reasonable by the FCC in its Section 271 reviews), and further of representing a discount from the rates proposed by Verizon which, as the report explains in detail, suffer from methodological flaws of a significant but (at this point) unquantifiable magnitude.

VI. RECURRING COSTS - UNEs

In this section, we discuss a series of input values used to calculate recurring charges for Verizon's UNEs as well as issues relating to specific UNES. Attached to this Report at Attachment B is a spreadsheet entitled "UNEs" which lists the specific rates we set as well as document entitled "Summary UNE Rate Calculations" which provides more detailed guidance regarding our calculations.

A. Inputs Impacting All Recurring Costs

1. Depreciation

a. Background

Depreciation measures the economic loss that occurs over the useful lives of the plant or equipment that is used to provide a service. Paragraph 702 of the LCO places the burden on ILECs to demonstrate "with specificity" that additional business risks faced in the provision of unbundled network elements justify modification of existing FCC-prescribed depreciation rates. For telecommunications equipment, an ideal depreciation schedule would account for technology obsolescence, physical life expectations, and competitive impacts.²⁴

Verizon and AT&T appear to agree that depreciation should be based on the projected lives of newly placed plant in service and should account for the expected declines in the value of capital goods over their useful lives.²⁵ The parties also agree that for the purpose of setting TELRIC-based prices, the straight-line depreciation method should be used.²⁶ The main disagreement between the major parties revolves around the estimation of the projected lives used in the cost models.

Because of the forward-looking nature of TELRIC studies, the choice of appropriate depreciation rates for use in the cost models depends on judgment concerning the future configuration of the network and the

²⁴Vanston Pref. Dir. at 4.

²⁵LCO at ¶ 702.

²⁶Vanston Pref. Dir. at 2; Lee Pref. Dir, Att. 6.

pace of technological innovation and substitution. Verizon and AT&T have different views about the pace of future changes to the telephone network, and thus, each has reached a different conclusion regarding the proper depreciation rates to be used.

b. Positions of the Parties

Verizon. Verizon supports its proposed economic lives and depreciation rates with the testimony of Dr. Lawrence K. Vanston of Technology Futures, Inc. (TFI). Dr. Vanston's firm conducts research in several fields, one of which is technology forecasting and strategic planning in the telecommunications industry. The depreciation lives and resulting rates proposed by Verizon were developed by Verizon's Capital Recovery Organization for use in its economic cost model, and Dr. Vanston's testimony was designed to show that Verizon's proposed depreciation rates were reasonable and were compliant with the TELRIC standard established by the FCC. Dr. Vanston also provided arguments against the use of the FCC prescribed depreciation rates.

Verizon argues that the depreciation rates prescribed by the FCC are not appropriate for use in a TELRIC study, because the FCC lives are not forward-looking, but rather are designed to compute appropriate depreciation rates for the embedded base of equipment. According to Verizon, the FCC lives measure depreciation based upon all vintages of embedded plant, not just new investment. Therefore, for new plant facing technological obsolescence in the coming years, this bias causes regulatory lives to be too

long. In addition, the FCC's regulatory approach to depreciation lives is based on historical retirements and mortality analysis and does not take into account technological change and the impact of competition. In today's telecommunications environment, technological obsolescence is a major cause of retirements in switching and circuit equipment and also is expected to cause similar effects with outside plant in the near future.²⁷

Finally, while Verizon admits that the FCC recently has made progress in recognizing the impact of technological change on prescribed lives, it argues that the FCC prescribed lives and depreciation rates do not adequately reflect the pace of this change. Verizon asserts that its depreciation study properly recognizes the fact that for TELRIC purposes, it is proper to assume a competitive market where investment in an asset is recovered over its useful life, otherwise investments will not be made. Verizon claims that its depreciation study is forward looking, reflects a network that is rebuilt without embedded equipment, and reflects asset values that are determined by competition, rather than by traditional rate of return pricing.

AT&T. In setting TELRIC-based prices for UNEs, AT&T proposed the use of the FCC prescribed depreciation lives and rates, supported by the testimony of its witness, Mr. Richard B. Lee, a Vice-President of the economic consulting firm Snavelly King Majoros O'Connor & Lee, Inc. (Snavelly King). Mr. Lee opined that the depreciation lives and rates used by the FCC in AT&T's Hatfield Model should be considered economic, and thus compliant with TELRIC standards, because they are based on a forward-looking

²⁷Verizon Initial Br. at 9-10.

analysis. Mr. Lee believes that the FCC rates are the most realistic estimate of projected plant and equipment lives, and the rates proposed by Verizon are too short for use in setting TELRIC based prices.

AT&T points out that for a number of recent years, the FCC has been applying a forward-looking methodology in setting depreciation rates. AT&T also argues that Verizon has failed to meet its burden of demonstrating with specificity that it faces additional business risks, which would justify a modification to existing depreciation rates in the provision of UNEs. Mr. Lee asserts that Dr. Vanston has not relied on Verizon specific data, but has merely conducted a generic examination of depreciation methodologies using a technique known as substitution analysis. This type of analysis is only as reliable as the assumptions of its user, and Mr. Lee asserts that Dr. Vanston's assumptions are questionable, at best.²⁸

AT&T also argues that many more state regulatory commissions have incorporated the FCC prescribed depreciation lives into their cost models than have adopted the proposed lives advocated by the RBOCs themselves.²⁹ According to AT&T, the FCC lives are reflective of a forward looking analysis and are based on a specific evaluation of the data related to plant and equipment in Maine, while Verizon's results rely on either industry generic or company-wide information, neither of which is in any way specific to Maine.

²⁸Lee Pref. Surr. at 9-11.

²⁹AT&T Initial Br. at 10-12.

c. Analysis

We find that the depreciation rates proposed by AT&T should be used in calculating UNE rates. Those rates are based on an analysis of the economic lives of equipment that is currently being placed in service in Maine, and represent the best estimate of the economic life of that property. The lives and rates are not based simply on historical retirement data, but contain a prospective analysis that appropriately considers technological change and obsolescence.

Because Verizon has been under some form of incentive regulation for many years in Maine, the Commission has allowed Verizon considerable freedom in its choice of depreciation rates for intrastate purposes. The Commission has not participated in recent FCC depreciation re-prescription proceedings, instead allowing Verizon and the FCC to reach agreement on the appropriate interstate depreciation rates, which in most cases Verizon also adopted for intrastate purposes. While the FCC prescribed depreciation rates may or may not be the ones that Verizon uses for financial reporting purposes, we do not believe that is the standard that should be applied to a TELRIC pricing proceeding. Rather, we find that the FCC lives and resulting rates are the best indicator of the economically useful lives of newly installed equipment that will be used to provide service to end-users or provide UNEs to competitors.

Verizon has not shown us that its shorter proposed lives are realistic or appropriate for Maine, but rather relies on speculative

projections that are unsupported by recent history. Therefore, in any future TELRIC filing we will require Verizon to use FCC prescribed lives. For the purposes of setting rates in this proceeding, the recurring rates proposed by Verizon must be decreased to mitigate the upward bias caused by Verizon's assumption of shorter depreciation lives. Thus, the rates we have calculated (the recurring rates for 2-wire analog loop, transport, switching, and ports) reflect the use of the FCC's prescribed lives. For all other recurring rates, we assume that the rates from other states, on which we base our rates, reflect findings similar to ours.

2. Cost of Capital

a. Background

In this section, we determine the cost of capital that should be used by Verizon in its TELRIC cost studies. Cost of capital is the rate that is applied to a utility's investment in plant and equipment and is used to calculate the annual dollar amount that the utility must receive in order to earn a reasonable return on that investment. The rate of return is also referred to as the overall weighted average cost of capital (WACC), because the cost (expressed as a rate) of each of the components of the company's capital is multiplied by the proportion of each source in the capital structure, and the multiplication results are summed. Thus, there are two basic determinations that we must make in order to calculate the proper overall cost of capital. We must determine the cost rate for each of the sources of capital, and we must determine the appropriate amounts of debt and equity in capital structure.

The starting point for analyzing the appropriate capital structure for UNE ratemaking purposes is the actual amount of each component contained in the financial statements of the company. This is the amount recorded on the utility's books of account under generally accepted accounting principles (GAAP) or under regulatory accounting principles, if the utility's books are subject to the jurisdiction of a regulatory agency.

Verizon asserts that using the company's actual capital structure is not appropriate, because it does not represent a forward-looking capital structure, and is influenced by accounting conventions, prior operating results and write-offs. Verizon maintains that a market-based capital structure should be used, because it represents the best available information regarding the forward-looking capital structure of a firm in a fully competitive industry. AT&T argues that a hypothetical capital structure based on industry-observed ratios should be used for setting UNE rates and that Verizon has misread, or at least misinterpreted, the FCC's pronouncements regarding the competitiveness of the UNE market.

Our objective is to determine the capital structure that best meets the requirements of the UNE rate-setting principles that have been put forth by the FCC and the courts. In addition to the appropriate capital structure, we must determine the rate that should be used for each component of the capital structure. Normally, for ratemaking purposes, the cost of the debt component presents the least controversy, since we can determine the company's average embedded cost of debt from its books of account. The

interest rate that the utility pays for each of its outstanding debt issues can be combined into a weighted average rate that is applied to the debt portion of the capital structure. Usually, short-term debt and long-term debt are considered separately because of the large disparity in the applicable interest rate. For the purpose of establishing UNE rates, we must consider whether the embedded debt rates represent an appropriate forward-looking cost of debt.

More difficult is the problem of determining the appropriate cost of equity to use in establishing UNE rates. Setting a reasonable cost of equity is a difficult and controversial task in any case, but it is rendered even more so by the length of time that has passed since the filing of testimony by each party's expert witness, by the dramatic changes that have occurred in the stock market since the evidence was compiled and presented, and by major changes in the composition of the telecommunications industry as a whole and Verizon itself.

Further, we last established a cost of equity (and an overall WACC) for Verizon's predecessor NYNEX on May 25, 1995, in Docket No. 94-254. That Order was issued prior to the company's mergers with Bell Atlantic and GTE to eventually form Verizon. While a thorough update of the data and analysis in the current record would provide the best basis for an examination of the effects that the intervening corporate restructurings and market variations have had on the cost of capital, because of time constraints, we do not have the latitude to conduct a thorough refreshing of the record.

We do, however, take official notice of recent prices for stocks in general and telecommunications stocks in particular, to the extent this information is useful in reaching our decision. We also take official notice of corresponding dividend yields for the stocks in question and recent yields for debt issuances of companies with comparable debt ratings, as well as growth projections from I/B/E/S. These steps allow us to apply our judgment to a reasonably current set of facts in reaching a decision about the proper cost of equity and the overall cost of capital.

We will analyze the capital structure and component cost issues individually, then combine our analysis into an overall WACC recommendation.

b. Capital Structure

i. Positions of the Parties

Verizon. Verizon asserts that, for the purpose of setting UNE rates, a forward-looking capital structure must be used, and the only capital structure that meets the relevant economic principles is one calculated using the market based average capital structure of the S&P Industrials.³⁰ Verizon argues that a market based capital structure provides an accurate proxy for the structure of a fully competitive firm on a forward-looking economic basis. Verizon also argues that market-based values are the best measures of the amounts that debt and equity investors have invested in a company on a going-forward basis and, thus, adhere to the FCC's requirements

³⁰Verizon Initial Br. at 12.

that prices for UNEs equal those that would result from a competitive marketplace. Verizon's recommends a capital structure containing 76.23 % equity and 23.77 % debt, based on stock and bond values for the S&P Industrials from mid-1997.³¹

AT&T. AT&T asserts that Verizon has overstated the amount of equity that should be included in the capital structure used for setting UNE rates, because it has overstated the level of competition, and thus the amount of operating risk, that is present in providing UNEs in Maine. AT&T claims that Verizon has distorted the FCC's pronouncements regarding the level of competition that should be assumed for the purpose of setting UNE prices. AT&T claims that UNEs are "bottleneck, monopoly services that do not now face significant competition."³²

AT&T asserts that the relevant business risk that must be considered is the risk faced by Verizon in providing UNEs, not its total enterprise business risk. Further, the burden of proving that it faces additional business risk falls squarely on Verizon, and it has failed to make that demonstration. AT&T asserts that because Verizon maintains a literal monopoly in the provision of UNEs, any new risk it faces in the local competition field is not relevant to this proceeding, whose purpose is to set rates for wholesale service elements.

³¹Verizon Initial Br. at 12.

³²AT&T Initial Br. at 16, quoting the FCC.

ii. Analysis

(a) Risk in UNE market

The subject of risk pervades much of our analysis regarding the appropriate cost of capital for setting UNE rates for Verizon. The FCC has indicated that UNE prices should be based on forward-looking economic costs, which implies a fully competitive market. The FCC also observes, however, that the provision of UNEs is a monopoly, bottleneck service of the ILEC. Therefore, we need to balance these somewhat contradictory views in order to arrive at a conclusion regarding the cost of capital to be used in setting UNE rates.

Verizon asserts that it faces an increasing level of risk in its local exchange operations, and that the risk of Verizon Maine's local exchange business is greater than the risk of investing in Verizon itself, because of the lack of geographic diversity, less diversity of products and service, less ability to realize economies of scale and scope, and less access to capital markets.

AT&T points out that local exchange competition in Maine is in its infant stage, and Verizon's provision of UNEs is a very low-risk endeavor. Further, Verizon's overall risk to investors is much higher than its LEC or UNE business in Maine and is influenced by its operations in markets that are far more competitive and are spread throughout the world.

We find persuasive the argument that the provision of UNEs is a relatively low risk business that retains many (if not all) of the characteristics of a classically defined monopoly. Verizon is the only available provider of UNEs to potential CLECs, and while allowing competitors to purchase or use pieces of a company's network may expose its retail operations to some added risk, the wholesale side of the business faces virtually no competition.

While there is no way to determine a strict market-based required cost of capital for a provider of UNEs, we temper our decisions on the appropriate capital structure and capital cost rates by our acknowledgment of the lack of competitive alternatives for network elements. We find that is the correct standard to apply in this case. Assuming a fully competitive market does not make sense, because there is (and most likely can be) only one UNE provider in a service territory.

(b) Capital Structure

Based on our determination concerning the level of risk faced in the provision of UNEs, we accept the capital structure recommendation of AT&T, which consists of 55% equity and 45% debt. AT&T's witness actually employed several different capital structures in completing his analysis, but his overall recommendation appears to rely mainly on the one with a 55/45 equity/debt ratio. We find Verizon's proposed capital structure contains too much equity and is not, in any event, a realistic representation of a forward-looking capital structure, even for a competitive firm.

AT&T's proposed capital structure is not strictly based on book values, but it does use those values as the basis for the result. While a capital structure based exactly on book values may not be appropriate for setting forward-looking prices, it does give some indication of the manner in which a company is actually capitalized, and the ratios of debt and equity proposed by AT&T are closer to the amounts contained in the book value capital structures exhibited today by telecommunications firms. We have examined the recent actual capital structures of the remaining RBOCs and several other large telecommunications providers, and we find that, on average, they have more debt (about 55%) than equity in their book value capital structures.

We will not adopt the more debt intensive capital structure in this case, because we do not have a sufficient record make that determination. Also, we have never used a market value-based capital structure in the rate-setting process, and Verizon has presented us with no acceptable reasons to begin doing so at this time. A capital structure based on market valuations does not necessarily indicate how a fully competitive (or any other firm) would be capitalized if the company was in its initial stages of organization. A market value-based capital structure reflects the actions of investors after the company has initially issued its securities. While it probably represents the amount that a company would receive for new securities' issuances, it is not safe to assume that a company would issue the same number of shares as a start-up operation. More plausibly, a company would determine a

target capital structure based on the level of risk of the proposed venture, then determine the amount of debt and equity securities that it needed to issue based on the prevailing prices and rates available in the capital markets at the time of issuance.

A mature company, such as an RBOC, goes through a similar process when it considers adjusting its existing capital structure. We have seen no evidence that companies use a market-based valuation when analyzing their own capital structure. Rather, we believe the majority of companies examine the capital structure shown on their books, then make appropriate changes based on the market conditions for additional issues of securities (debt or equity).

The value of the company's shares in a competitive stock market reflects the consensus opinion of investors about the future prospects of a company. In that sense, it is truly forward looking. Multiplying the current price per share by the number of outstanding shares does not provide any definitive information about the proportions of debt and equity that a firm would use in selecting a "target" capital structure. Also, a capital structure based on market valuations will tend to exhibit potentially large variations over the course of time, as capital markets naturally fluctuate. Given the declines in stock market values over the past several years and, to some extent, the decrease in interest rates and the corresponding increase in debt values, it is quite possible that a market-base capital structure calculated at recent market prices would contain significantly different proportions of debt and

equity than those presented by Verizon. For all these reasons, we reject the use of a market-based capital structure.

Given our findings that providers of UNEs face little business risk, it follows, according to sound financial theory, that those providers can assume a higher degree of financial risk through their choice of a capital structure. In Docket 94-254, we found a capital structure containing approximately 59% equity was reasonable for NYNEX's operations in Maine. That ratio was based on the entire intrastate business of NYNEX, including local, access and toll, while in the present instance, we are examining only the provision of UNEs by Verizon, the successor to NYNEX. Given the current book-based capital structure values (Verizon has about 36% equity), as well as our rejection of Verizon's market-based approach, we find it reasonable to adopt the capital structure proposed by AT&T. While a completely updated record might lead to a finding that a more highly leveraged capital structure would be appropriate, we find that the capital structure proposed by AT&T represents a reasonable approximation of a forward-looking capital structure, and we adopt the 55/45 equity/debt ratio proposed by AT&T.

c. Cost of Debt

The parties presented costs for the debt component of the capital structure that were relatively close to each other. Verizon proposed a long-term debt (LTD) rate of 7.63%, and AT&T recommended that 7.7% be adopted. In order to determine if the cost of debt proposals in the record are reasonable, we examined the recent interest rates for LTD instruments of

companies with a comparable credit risk rating to Verizon, as tracked by Moody's Investors' Service. We found that utilities with an "A" credit rating recently had an annual yield of 7.96% on their LTD, while utilities with "Aa" ratings had LTD yields of 7.64%. Verizon currently does not have rated debt outstanding, but its predecessor companies have ratings within the range of "A" to "Aa", and so we feel confident that the debt costs in the record are within the range of reasonableness. Therefore, we will adopt the AT&T proposed debt rate of 7.7%.

d. Cost of Equity

As in many previous rate-setting dockets, the cost of equity recommendations of the parties provide widely divergent results and are among the most highly contested issues in the case. Verizon recommends that a cost of equity of 14.9% be adopted, based on the testimony of its expert witness, Dr. James Vander Weide, who used a discounted cash flow (DCF) analysis of the Standard & Poors' (S&P) Industrials to reach his conclusion. AT&T proposed a cost of equity of 11.5%, based on the testimony of Dr. Robert Hubbard, who employed as his primary analytical tool a DCF methodology applied to a group of very large telecommunications providers, and he also used an approach known as the capital asset pricing model (CAPM) to corroborate his results. From a review of Dr. Hubbard's testimony, it appears that he actually selected the mid-point between the DCF and CAPM result as a point estimate for his cost of equity recommendation.

i. Positions of the Parties

Verizon. Dr. Vander Weide based his recommendation on his assertion that Verizon's wholesale business, i.e., the provision of UNEs to competitors, exhibits at least as much business risk as that of the S&P Industrial companies, and thus, he concluded that use of the weighted average DCF result for those companies is a reasonable proxy for the cost of equity of Verizon. The DCF model that he used assumed quarterly dividends, used a constant growth methodology and included an allowance for flotation costs. For growth rates in the DCF calculation, Dr. Vander Weide used those provided by the Institutional Brokers' Estimate System (I/B/E/S), which come from a survey of a large number of investment analysts who work for a wide variety of securities firms. The I/B/E/S growth forecasts are widely distributed among the investment community and are recognized as representing a good cross-section of the predictions of professional analysts.

In calculating the DCF cost of equity rate for Verizon, Dr. Vander Weide used the average stock prices of the S&P Industrials for the month of August 1996, the most recent quarterly dividend at that time for each company, adjusted by the growth rate, then annualized, and the I/B/E/S dividend growth forecast for these companies. The discount rate that equalizes the DCF equation is the implicit rate of return that investors are expecting on their investment, and thus, it represents the cost of equity to the firm. The implicit rate of return theoretically encompasses all the risk characteristics that investors associate with a particular investment.

Dr. Vander Weide asserts that, even though investors cannot invest directly in the local exchange market in Maine, that market is becoming increasingly competitive. Couple this with the fact that the LEC operation of Verizon is highly capital intensive, and the conclusion he reaches is that the local exchange business is a venture whose risk equals that of the largest corporations in the United States, whose businesses are primarily in competitive industries. Further, because Verizon is providing both retail and wholesale services with the same plant, equipment and personnel, the risk associated with the retail and wholesale operations is also equal. The rapidly changing technology of the telecommunications business only adds to the risk level of the venture.

AT&T. AT&T, through its witness Dr. Hubbard, claims that Verizon faces virtually no risk in the provision of UNEs, because they are bottleneck, monopoly services that do not face significant competition. Further, AT&T argues that Verizon has not met its burden of proving that the business risks it faces in providing UNEs justifies a significantly higher rate of return, as specified in the FCC's LCO. AT&T points out that Verizon agrees that competition in the local exchange market is just beginning in Maine, and that no competition exists in the market for wholesale services.

AT&T challenges Dr. Vander Weide's assertion that the risk faced by Verizon in providing UNEs is equal to that encountered by Verizon in the competitive local exchange arena, which is quite small at present,

and AT&T asserts that the risk is much less than is contained in Verizon's far-flung and, in many cases, unregulated activities.

Dr. Hubbard conducted a DCF analysis using 11 large telecommunications providers as his proxy group. In his analysis, he used the large regional holding companies (there were still seven of them) that were operating at the time of his analysis and some other large, mainly local, telecommunications providers. Because these companies all have operations beyond the local exchange business (and much beyond the provision of UNEs), AT&T claims that these companies have a far greater degree of business risk than a company providing UNEs, and thus, Dr. Hubbard's cost of equity estimate is on the high side.

Dr. Hubbard used the annual version of the DCF model and a three-stage growth projection, with the I/B/E/S growth rates used only for the first five years. After that, the growth rate for each company was gradually reduced in a two-stage process to the long-run growth rate anticipated for the economy as a whole, or 5.50%. Dr. Hubbard asserts that no company can grow indefinitely at a rate that exceeds the growth rate for the economy in general, or else the company would eventually subsume the entire economy.

Dr. Hubbard asserts that using the quarterly version of the DCF model inflates the implied rate of return by providing an additional return to the company that is not warranted or needed. He claims that the use of a quarterly DCF gives Verizon a higher effective rate of return,

because it can reinvest its cash flows as it receives them monthly. Dr. Hubbard also asserts that no flotation cost allowance is necessary, because flotation costs consist primarily of underwriter's fees and are generally borne by investors, who include them in their return requirement, and are not paid by companies. Including an allowance for them in the cost of equity estimate would constitute a double-count and lead to an inflated cost of equity.

Dr. Hubbard also used a CAPM method supposedly to provide a check upon his DCF model results. In applying the risk-premium method, Dr. Hubbard employed both Treasury Bills and Treasury Bonds as his risk-free investment instrument, a market-based beta factor and the appropriate historical risk premium for the bills and the bonds. In reaching his recommendation, he appears to give equal weight to the DCF and CAPM results in arriving at a cost of equity estimate of 11.5%.

ii. Analysis

The DCF methodology employs a discounting process to equate the future value of a stream of expected dividends (as well as the expected change in stock price at some indefinite future time) to today's stock price. It has been used for many years by this Commission (and many other regulatory commissions also) as the primary tool for determining a utility's cost of equity. While the DCF formula is relatively straightforward in principle, applying it requires use of considerable judgment in selecting the appropriate inputs and the method of applying them into the formula. This use of judgment leads to the wide variation present in the results put forward by the witnesses for

AT&T and Verizon. The use of the CAPM method as a corroboration of the DCF result is also a procedure that this Commission has used in many previous cost of equity determinations.

The expert witnesses of each of the parties differ mainly in their opinion about the level of risk that should be incorporated into the DCF formula and the input selection process. This difference of opinion leads to major variations in the selection of the comparable company groups and the choice of growth rate estimates (as well as the use of a single-stage versus multi-stage version of the model) for use in the DCF analysis. As we stated in the general discussion of the risk issue, we find the level of risk inherent in the provision of UNEs to be relatively low, especially when compared to the risk faced generally by the RBOCs and other large telecommunications entities across their numerous lines of business, a growing proportion of which are unregulated, in many countries around the world. Increasing competition in the local exchange service market does not necessarily indicate increasing risk in the business of providing UNEs. There virtually is no competition in the latter market, and in Maine at least, local exchange competition is still in its infancy. We do not agree with the risk assessment presented by Verizon, and thus, we will rely on the recommendations put forth by AT&T.

While there is no group of comparable companies that is precisely suited to the business of providing only UNEs, we find Dr. Hubbard's use of large telecommunications providers to be an acceptable choice as the proxy group of comparable companies for a DCF

analysis. In fact, those companies probably exhibit a greater degree of risk than would a company engaged only in providing UNEs, but we will accept Dr. Hubbard's group as a reasonable proxy, because they all are in the telecommunications industry, and several of them actually do provide UNEs as part of their operations. We find that the S&P Industrials are not a reasonably comparable group of companies, because the business risk inherent in their operations generally exceeds the risk faced by a provider of UNEs, and their forecasted growth rates are well above what we would expect for providers of basically monopoly services.

A problem that we face is the length of time that has passed since the witnesses completed their analyses and filed their recommendations. First, five of the companies in Dr. Hubbard's group of comparables have been involved in mergers with other companies on the list. Next, the United States economy has been hit with a recession, which was exacerbated by the events of September 11, 2001, and as a result, the stock market, led by technology and telecommunications stocks, has fallen dramatically during the last two years. While we cannot take the time to complete a thorough update of the record, we have reviewed current stock prices and dividends and I/B/E/S growth rates of the remaining RBOCs and two large telecommunications firms (Alltel and Century Tel) in order to give us a general assessment of DCF results based on more current information.

Before we discuss our updated results, we note that in many prior proceedings in which a cost of equity determination was

made, we generally have found the use of the quarterly dividend version of the DCF model to be appropriate, and we will retain that conclusion in the instant case. The vast majority of dividend-paying firms do so on a quarterly basis, and it is our assessment that investors' expectations are based on the assumption that dividends will be paid quarterly. Thus, a proper discounting of future cash flows, as required by the DCF method, should take the quarterly payment pattern into consideration. The resulting difference between the quarterly and the annual versions of the DCF model is relatively minor, but we believe the quarterly version is more correct conceptually, is easy to apply, and therefore, we will use it.

Also in previous cases, we have consistently included an allowance for flotation costs in the calculation of the proper cost of equity, on the theory that companies must incur underwriting and other out-of-pocket issuance expenses when they issue stocks. We have no reason to modify that thinking, so we will continue to include a relatively modest basis point allowance in our overall cost of equity calculation to account for flotation costs. Generally, the allowance for quarterly dividends and flotation costs increase the annual cost of equity result by less than 15 basis points.

Our cursory updating process produced results that are fairly similar to those of Dr. Hubbard, even with the passage of several years and with the many intervening events that have influenced the results and altered the various pieces of the equation. After accounting for quarterly dividends and flotation costs, our DCF results exhibit a range of about 11% to

about 12%, with a midpoint of around 11.5%. We have also done a somewhat cursory CAPM calculation, based on our best estimates of the input values involved, found that the 11.5% DCF cost of equity is confirmed by the range obtain with the CAPM method. These updated results lend support to our conclusion that AT&T, through Dr. Hubbard, has provided the more plausible estimate of the appropriate cost of equity to be used in setting prices for UNEs.

We find a cost of equity of 11.5% to be proper for setting UNE rates for Verizon, and combining this result with our capital structure and cost of debt findings, we find the overall, after-tax cost of capital for Verizon is 9.79%. Assuming a state corporate tax rate of 8.93% and a federal rate of 34% results in a pre-tax WACC of 13.99%. In any future TELRIC filing, we will require Verizon to use our WACC. For the purposes of setting rates in this proceeding, the recurring rates proposed by Verizon must be decreased to mitigate the upward bias caused by Verizon's assumption of a higher cost of capital. Thus, the rates we have calculated (the recurring rates for 2-wire analog loop, transport, switching, and ports) reflect the use of our WACC. For all other recurring rates, we assume that the rates from other states, on which we base our rates, reflect findings similar to ours.

3. Allocation of Joint and Common Costs

a. Background

Joint and common costs are the expenses incurred by a firm that cannot be directly attributed to a single product or service; rather, they are common to multiple products or the entire output of the firm. In order to

account for these costs, a firm will need to charge a price that exceeds the direct cost of providing each product. The mark-up for the various products must be sufficiently large that the company is able to recover its joint and common costs. In the UNE cost studies, joint and common costs were allocated to the UNEs through the use of carrying charge factors. The investment associated with a UNE is multiplied by an annual charge factor. The annual charge factor is set equal to a value that permits a company to recover its depreciation, joint and common, maintenance, tax, cost-of-money, and other miscellaneous expenses.³³

b. Position of the Parties

AT&T. AT&T maintains that Verizon's general allocation methodology for joint and common costs is reasonable, however, its use of 1995 year-end gross investment to determine the common costs factors is improper, because it results in factors which are calculated on the basis of embedded, not forward-looking, costs. AT&T argues that Verizon's factors must therefore be rejected because they are not consistent with forward-looking TELRIC principles.³⁴

AT&T also argued, but not in the context of joint and common factors, that Verizon's cost study does not account for the substantial savings that Verizon expects from the Bell Atlantic/NYNEX merger.³⁵ Essentially AT&T argues that Verizon should be a more efficient company and that the

³³Baker Rev. Pref. Dir. at 5,46

³⁴AT&T Initial Br. at 32.

³⁵Selwyn Pref. Surr. at 12-13; Globerson Pref. Dir. at 14-15.

efficiencies should be reflected in rates. One way to reflect increased efficiencies would be to increase the joint and common factor.

Verizon. Verizon claims that AT&T's argument in support of including merger savings in its cost study is misplaced. Verizon maintains that the projected savings to which AT&T refers to was merely an estimate of savings that the combined company expected to realize as a result of consolidating operating systems and other administrative functions and reducing management positions. It does not represent out-of-pocket expense reductions measured against some past historical period. According to Verizon, its study already assumes and reflects a significant amount of productivity improvement so there is no need to tack speculative merger-related savings onto the analysis. Furthermore, Verizon argues that there is no basis on this record, for adopting the arbitrary reductions proposed by AT&T and that doing so would be tantamount to a productivity double-count.³⁶

c. Analysis

Since no party has disputed Verizon's proposed allocation of joint and common costs, we will approve Verizon's methodology. However, we agree with AT&T that the current common cost factor of 0.66 percent is based upon outdated data. Since the FCC's TELRIC pricing standard requires forward-looking estimates, we will increase the common cost factor by 10% to .594 percent to reflect efficiency gains that have been achieved subsequent to 1995, including efficiencies gained through the merger. For rates

³⁶Verizon Reply Br. at 26

where we use an average of other states' TELRIC rates, we will assume that those states' rates reflect a similar adjustment for joint and common costs.

4. Fill rates and Cable Size Assumptions

a. Background

In order to set recurring rates, the Commission must decide upon proper fill rates and cable size assumptions for various network elements that take into account both design and economic efficiency. As pointed out by the FCC, "[I]n determining appropriate cable sizes, network engineers include a certain amount of spare capacity to accommodate administrative functions, such as testing and repair, and some expected amount of growth. The percentage of the total usable capacity of cable that is expected to be used to meet current demand is referred to as the cable fill factor," or utilization rate.³⁷

Fill rates have a significant impact on the price of many network elements because they allow the cost of unused network capacity to be recovered from the portions of a network that are in use.³⁸ Because the unused capacity is reflected in the price of the UNE, an inaccurate utilization level can result in either too high or too low UNE prices. As the FCC has stated, "if cable fill factors are set too high, the cable will have insufficient capacity to

³⁷Tenth Report and Order, CC Docket No 96-45 Federal-State Joint Board on Universal Service, and CC Docket No 97-160 Forward-Looking Mechanism for High Cost Support for Non-Rural LECs (rel. Nov. 2, 1999) (High Cost Order) at ¶ 186.

³⁸For example, consider a hotel room that sleeps four at a cost of \$200 per night. If the room is filled to capacity (100% fill rate) the cost for a night's lodging is \$200 / 4 or \$50 per person. However, if only 3 people share the room (75% fill rate) then the cost is \$66.67 per person. If 2 people share the room (50% fill rate) then the cost is \$100 per person. As you can see, when the fill rate is lowered the price of the room, per person, increases because each person using the room is required to pay for a larger share of the unused capacity.

accommodate small increases in demand or service outages. In contrast, if cable fill factors are set too low, the network could have considerable excess capacity.”³⁹

Unused or excess network capacity is caused by a number of factors in an efficiently run network. Excess capacity exists because it is impossible to perfectly forecast demand, instantaneously add or subtract capacity as demand fluctuates, and because of breakage. Breakage is the term used to describe excess capacity that is installed because capacity cannot always be adjusted in the same discreet increments as demand.⁴⁰

b. Positions of the Parties

As expected, Verizon and AT&T have presented opposing views of what constitutes a reasonable estimate of fills in an efficient, forward looking network. Verizon has proposed conservative fill factors to ensure that it recovers its purported costs while AT&T has proposed more aggressive fill factors to make sure that the UNE rates Verizon receives are not unjustly inflated.

Verizon. Verizon avers that for most of the components of the TELRIC network, the utilization factors are primarily a function of three factors: (a) the fill-at-relief point (*i.e.*, the engineering parameter used in administering the network); (b) the breakage points of equipment (*i.e.*, the size of

³⁹High Cost Order at ¶186.

⁴⁰ “For example, fiber cable is generally available in "standardized" units of 12, 24, 48, 72, and 144 fiber strands. (Tr. at I-210). Therefore, if there is a present need for 74 fibers for a specific application, you will obtain an additional 70 spare fibers when utilizing 144 fiber cable (144-74) as "breakage.” Verizon Reply Br. at 18.

the components that can be purchased); and (c) the unit of capacity addition that would be appropriate for the planning horizon associated with the given piece of equipment. Verizon asserts that these factors drove the determination of utilization for local switching, tandem switching, interoffice elements, channel units, channel bank commons, fiber feeder, copper distribution, and all signaling elements.⁴¹

Verizon claims to have designed its study to reflect the average utilization ratios that Verizon observes in its network. That is, Verizon did not employ the very low fills of the initial years of a facility's life (when demand is low and "breakage" is high), nor did it use the fill at exhaust towards the end of the facility's life. Instead, Verizon chose the utilization at the mid-point of the investment's life as a representative or average utilization ratio.⁴²

Verizon believes that its "fill factors are reasonable estimates of fills in an efficient, forward-looking network architecture."⁴³ Further, Verizon argues that its evidence on utilization reflects "professional judgment based on both past observed levels of utilization, as well as technological factors such as breakage."⁴⁴

⁴¹Verizon Initial Br. at 24.

⁴²Tr. D-28-29; Verizon Reply Br. at 19

⁴³Verizon Initial Br. at 25.

⁴⁴Id.

With regard to loop plant, Verizon proposes fill rates of 40% for copper distribution, 50% for conduit, and 60% for fiber feeder.⁴⁵ Verizon contends that AT&T's proposed fill rate of 70% relies on "wildly irrational" assumptions about future growth in Maine.⁴⁶ According to Verizon, "to reach AT&T's claimed 70% fills, the average number of assigned lines in Verizon's suburban exchanges would have to grow from the present 17,000 lines to 56,666 lines."⁴⁷

Verizon also maintains that AT&T's claim regarding the FCC's criticism of the fill factors in Massachusetts is a distortion of the record. According to Verizon, the FCC determined that it would rely on the state's assessment of utilization ratios, and that Massachusetts' use of a 40% fill factor "fall[s] within a reasonable TELRIC range."⁴⁸

With regard to its proposed fill factors for unbundled transport, Verizon claims that AT&T has mistakenly asserted that since the unbundled rate for dedicated transport is not usage sensitive (*i.e.*, the CLEC buys the entire dedicated capacity of the network element), the fill rate of that facility is immaterial. Verizon maintains that AT&T has confused the CLEC's utilization of an unbundled dedicated transport facility with Verizon's utilization of

⁴⁵Helgeson Pref. Dir., Attachment Part A. While the record contains discussion of a 40% utilization rate for distribution cables (e.g., Tr. N91), Verizon's study is based on a copper distribution fill of 35, 27, and 31% respectively for the urban, suburban, and rural zones. Baker, Work Papers, Part A, page 33 revised, line 6.

⁴⁶Helgeson Pref. Reb. at 5-6.

⁴⁷Verizon Reply Br. at 18.

⁴⁸Id. at 19.

the investment needed to provide dedicated transport in total.⁴⁹ Therefore, Verizon believes that it is appropriate to apply a fill rate to dedicated transport.

As with other network elements, Verizon claims that uncertainty of demand and breakage do not allow for fill rates anywhere near 100%. Rather, Verizon claims that the 50% fill rate for Interoffice Facilities (“IOF”) used in its study accurately represent the number of interoffice trunks actually used by CLECs or Verizon at a representative point in time.⁵⁰

AT&T. According to AT&T, Verizon has inflated its loop plant costs by applying inefficiently low fill rates. AT&T believes that even when using Verizon’s excessively low numbers, when a unit of plant reaches capacity and a second unit is provisioned, the average fill factor over the relevant period is 70%.⁵¹

AT&T also claims that the FCC has recently criticized similar fill factors proposed by Verizon and adopted by the DTE in Massachusetts. In comparing the 40% fill factor to those used in other jurisdictions, the FCC “question[ed] whether the low fill factor used in Massachusetts is appropriate without a state-specific justification.”⁵² AT&T believes that Verizon has failed to provide state specific justification for its low fill factors.

⁴⁹Id. at 25.

⁵⁰Id.

⁵¹AT&T Initial Br. at 41 *citing* Globerson Pref. Supp. at 3.

⁵²AT&T Initial Br. at 42.

AT&T suggests that the Commission, at a minimum, adopt the “more reasonable fill factors approved by both the New York Public Service Commission and the Vermont Public Service Board, which were: for fiber feeder, 80 percent in New York and 75 percent in Vermont; for copper distribution plant, 50 percent in both states; and, for NIDs, 62.5 percent in Vermont.”⁵³

AT&T also believes that Verizon is unjustly inflating the cost of dedicated interoffice transport by applying a fill factor of 50% to this element when no fill factor is necessary. AT&T claims that there should be no fill factor for this element because “the price charged to CLECs for each dedicated transport facility is by definition not usage sensitive. CLECs will pay the same price whether they make 100 percent use of it, do not use it at all, or use it at levels somewhere in between.”⁵⁴

Moreover, AT&T claims that, although Verizon asserts that the proper way to size an element for the purposes of a TELRIC study is to provide sufficient capacity “to accommodate current base demand plus anticipated growth in the normal planning cycle,”⁵⁵ this method was ignored by Verizon when sizing the interoffice element. Rather, Verizon looked at the

⁵³AT&T Brief at 42 citing Globerson Pref. Dir. at 17 (citing NY PSC order); Vermont Public Service Board, Docket 5713, Phase II Order of 2/4/2000, at 20-21, 99.

⁵⁴AT&T Initial Br. at 48 citing Tr. I-43 (Baker).

⁵⁵Helgeson Pref. Dir. at 13.

utilization rate that happens to be in place for its embedded plant and assumed that a similar utilization rate might be experienced in the future.⁵⁶

AT&T claims that Verizon's support for its assumptions are unreasonable. For example, AT&T asserts that Verizon fails to explain why it would always provide relief for a full OC-12 facility by upgrading to an OC-48, which provides a four-fold increase in capacity. According to AT&T, not all increases in demand would require such a drastic increase in capacity. AT&T suggests that it may be more appropriate to provide relief for a full OC-12 facility by adding another OC-12 or even an OC-3 when demand is not expected to grow rapidly. As a result AT&T suggests that the Commission adopt a fill factor of 70% or more for common transport.⁵⁷

c. Analysis

We find that Verizon has failed to show that its proposed fill rates and cable sizes are appropriate estimates for an efficient forward-looking network. We reject the feeder and distribution fill rates proposed by Verizon because they are unacceptably low. When combined with overstated cable size estimates, the low fill rates result in a significant overstatement of Verizon's costs.

i. Loop Facilities

A properly designed TELRIC model should estimate fill rates and cable sizes based upon current demand plus a reasonable

⁵⁶AT&T Brief at 49; Tr. I- 202-03.

⁵⁷AT&T Initial Br. at 49.

amount of excess capacity to account for breakage, customer churn, growth, and fluctuations in demand. However, an examination of Verizon's "Link Study"⁵⁸ indicates that Verizon's methodology allocates an unreasonable amount of excess cable capacity in addition to proposing fill rates that are downwardly biased.

First, with regard to distribution facilities, Verizon proposes an average suburban distribution fill of 27 percent.⁵⁹ This fill rate is exceptionally low because Verizon's model assumes, on average, that a 400 pair distribution cable will be installed in a suburban Carrier Serving Area ("CSA") that exhibits an average demand of 102 lines even though Verizon could have installed a 200 or 300 pair cable instead. Similarly, Verizon's model employs a 900 pair distribution cable in a suburban CSA that exhibits an average demand of 251 lines even though a 600 pair cable could also provide more than sufficient capacity.

We find Verizon's assumptions unreasonable. We therefore adopt AT&T's proposal to use a 50% cable fill in the distribution portion of the network. We note that this is the same rate adopted by the New York and Vermont Commissions for the purpose of setting UNE prices.

We have also adjusted the cable sizes to values that are consistent with the demand data used in the model. As we explained above, the cable sizes used in Verizon's model are unreasonable

⁵⁸Verizon's link study (Exh. BA-17) can be found in the Excel files "Linkme.xls" and "LINKmewp.xls"

⁵⁹See "LINKmewp.xls" at tab "LINES" Cell J-38.

given the anticipated level of demand. Furthermore, it is appropriate to use smaller cables to reflect our decisions regarding fill rates. A higher fill rate generally implies that either the level of demand must be increased or the selected size of cable must decrease.⁶⁰ The same flaw described above also applies to Verizon's model for copper feeder facilities. The proposed suburban fill rate for this element is only 34 percent. This is because Verizon uses a 900 pair feeder cable to serve a suburban CSA with an average demand of 202 lines,⁶¹ and a 1200 pair feeder cable to for a suburban CSA with an average demand of 502 lines. Again, Verizon chooses to ignore the less expensive, lower capacity cables even though it is reasonable to assume that smaller cables could satisfy the needs of the network.⁶²

With regards to copper feeder cable, we accept Verizon's fill rate of 62% for rural areas. We find Verizon's assumed fill rates for suburban and urban areas to be unreasonable. For urban and suburban areas, we have used the same value, 62%, that Verizon proposed for rural areas. We

⁶⁰ Other factors can cause a resizing of the cable. For example, we have changed the number of fibers per carrier serving area and this too affects the cable size.

⁶¹ For example, assuming a utilization ratio of 75%, a 300 pair cable would be installed. This value is derived by dividing 202 by 75%, and then rounding up to the next largest cable size. This would result in an effective fill rate of 67% (202/300). The 300 pair cable is 1/3 the size used in the Verizon's cost study.

⁶² These conclusions are supported by the FCC's own determination in the order granting 271 approval to SBC in Kansas and Oklahoma. See: In the Matter of Joint Application by SBC Communications Inc., Southwestern Bell Telephone Company, and Southwestern Bell Communications Services, Inc. d/b/a Southwestern Bell Long Distance for Provision of In-Region, InterLATA Services in Kansas and Oklahoma. CC Docket No. 00-217 at ¶80. ("We find that a fill factor that assumes that more than two-thirds of capacity is idle for an indefinite time is unreasonably low. By way of comparison, the Commission adopted fill factors ranging from 50 to 75 percent for the Universal Service Fund (USF) cost model, the Kansas Commission adopted a 53 percent fill factor for distribution cable, and the New York Public Service Commission adopted a 50 percent fill factor." (footnotes omitted))

find that Verizon has not provided compelling evidence to support the use of a lower utilization factor in the other two zones. Furthermore, the 62% fill factor is more in line with the FCC's decision regarding fill factors than the rates proposed by Verizon.⁶³

Verizon's model also fails to correctly model fiber optic feeder cables. For example, in the rural areas, Verizon assumes that each CSA requires 12 fibers to serve a total of 142 lines today and 177 lines in ten years.⁶⁴ Four fibers would satisfy the reported demand at each CSA. The assumption that 12 fibers are required implies that either Verizon has seriously overstated its need for fibers or has understated the demand. Thus, for purposes of setting prices in this proceeding, we have modified Verizon's study by assuming that four fibers are needed at each CSA. We find that this modification adequately addresses AT&T's concern regarding the inclusion of excess fiber capacity in the loop study and thus we accept Verizon's use of a 60% fill factor as modified above.

The cable fills adopted in this proceeding are limited to use in this proceeding. In future TELRIC filings, we Order Verizon to automate the selection of cable sizes. The current cost study relies on the judgment of Verizon's engineers regarding the sizing of cables. We find this method unacceptable because it is not apparent that the selected numbers are reasonable and the costing process is inflexible.

⁶³ High Cost Order, Appendix A1, tab Fillfact.

⁶⁴ Tr. D-3; and Baker Pref. Dir., Workpapers, 2A pages 17 and 65 of 65.

For the purposes of setting rates in this proceeding, the recurring 2-wire analog loop rates we have calculated reflect the use of our fill rates. For all other recurring rates, we assume that the rates from other states, on which we base our rates, reflect findings similar to ours.

ii. Interoffice transport facilities

We reject AT&T's argument that there should not be a fill rate applied to dedicated transport facilities. The fact that CLECs will pay a rate for dedicated transport facilities that is independent of usage does not logically lead to the conclusion that a fill rate is inappropriate. AT&T is effectively arguing that there is no breakage in cable sizes and therefore the fill can be 100%. This implicit assumption is not supported by the facts. Cables come in discrete sizes and it would be the rare occasion when all fibers are in use. Therefore, while the cost incurred by CLECs for a single dedicated transport facility may be independent of usage, the link in question is still part of the total transport element constructed by Verizon. We conclude that it is appropriate to apply a fill factor to dedicated transport facilities so that the cost of providing interoffice transport, as a whole, is properly distributed among the individual elements that are projected to be in use.

We find the 50% fill rate proposed by Verizon unacceptably low. Verizon allegedly proposed this figure based upon current fill levels and a logical growth increment of the SONET network.⁶⁵ As with Verizon's link study, we believe that Verizon has modeled inefficient interoffice facilities.

⁶⁵ Helgeson Pref. Dir. at 32.

The cable sizes chosen by Verizon to implement upgrades to interoffice facilities result in too much excess capacity. However, we also find AT&T's proposal of 70% unrealistically high. A fill rate of 60% for dedicated and common interoffice transport facilities strikes the balance between the two positions and comports with findings made in other jurisdictions.⁶⁶

We have calculated the interoffice transport rates through a two-step process. First, we recalculated Verizon's fixed and mileage rates for DS1 transport by adjusting the inputs for the cost-of-money, depreciation, utilization, and joint costs as discussed in this Order. We then set each of Verizon's transport mileage rates equal to Verizon's proposed rate times the ratio of our calculated DS1 mileage rate divided by Verizon's proposed DS1 mileage rate. This reduced the proposed rates by approximately 59%.

We followed the same procedure for the fixed interoffice rate. We set each of Verizon's fixed mileage rates equal to Verizon's proposed rate times the ratio of our calculated DS1 fixed rate divided by Verizon's proposed DS1 fixed rate. This reduced the proposed rates by approximately 57%.

⁶⁶Investigation into New England Telephone and Telegraph Company's (NET's) tariff filing re: Open Network Architecture, including the unbundling of NET's network, expanded interconnection, and intelligent networks in re: Phase II, Module 2 – Cost Studies Vermont Public Service Board, Docket No.5713, (Feb. 4, 2000) (Vermont Phase II Order) at page 30.

B. Inputs Impacting Loop-Based Recurring Rates

In this section, we discuss issues which directly impact the calculation of loop-based UNEs, including 2 and 4-wire analog and digital loops, ADSL, HDSL, 56K lines and others. As is discussed in more detail below, we have incorporated all of the findings made in this section in our calculations for 2-wire analog loops only. We chose 2-wire analog loops because of the predominance of CLEC orders for these loops. We were unable, given the limitations of time and Verizon's models, to complete calculations for other loop-based rates. Thus, for all other loop-based rates, we used the average state rate.

1. Fiber/Copper Breakpoint

a. Background

Telephone networks consist of two types of wires: copper and fiber optics. Per foot, copper is generally less expensive and does not require additional electronics for short distances.⁶⁷ Fiber is more expensive per foot at short distances but becomes cheaper than copper for long distances because it does not require additional electronics. When constructing a telephone network, engineers will consider the cost of fiber versus copper in determining which facility should be used at any given location.

⁶⁷Tr. M-123.

The “fiber/copper break point” is the term used to describe the particular distance from Verizon’s central offices at which fiber optic cable, rather than copper cable, becomes the cost-minimizing, efficiency-maximizing technology. Since copper and fiber transmission facilities have different cost characteristics based upon overall loop length, a mix of copper and fiber facilities should minimize costs. Because loop costs constitute a significant portion of Verizon’s total cost of service, determining the fiber/copper break point will have a major impact on all loop-related UNE prices.

The Commission must decide if Verizon’s 100% fiber feeder proposal is supported by the record and complies with the FCC’s TELRIC principles. To comply with this pricing standard, Verizon’s proposal must utilize the most efficient cost minimizing technology that is currently available.

b. Positions of the Parties

Verizon. Verizon’s cost studies assume deployment of 100% fiber cable in the network. Verizon supports this proposal by stating “the economic efficiency of optical DLC has reached a point where all feeder capacity can be most efficiently created using these systems.”⁶⁸ For several years, all new feeder capacity for Verizon ME has been added with optical DLC.”⁶⁹ Verizon also cites the testimony of its witnesses Mr. Helgeson and Mr. Gamsby as support that fiber is the most efficient technology for building feeder plant and

⁶⁸Helgeson Pref. Dir. at 11-12.

⁶⁹Verizon Initial Br. at 27.

that its use for that purpose is consistent with Verizon's current plans for deploying feeder facilities.⁷⁰

AT&T. AT&T is critical of Verizon's assumption that all feeder cable will be fiber optic cable. AT&T argues that Verizon's configuration does not comply with the FCC's TELRIC requirement that Verizon assume the least cost, most efficient, and reasonable technology in building its cost study.⁷¹ AT&T asserts it is cheaper to use copper feeder for loops (feeder plus distribution) of less than 12,000 feet and on loops with feeder runs alone of less than 9,000 feet. AT&T points out that Verizon has not provided any data or analysis to the contrary.⁷²

AT&T also argues that the "Vermont Public Service Board recently found that a forward-looking UNE cost model should assume that fiber feeder will only be used on feeder runs that are longer than 9,000 feet, and that copper cable will be used on feeder runs of less than 9,000 feet."⁷³ AT&T believes that the evidence in this proceeding compels the same conclusion here.⁷⁴

c. Analysis

Verizon's all fiber feeder position dates back to Docket No. 92-130 and a document called "The Network of Tomorrow," which

⁷⁰Verizon Initial Br. at 27.

⁷¹AT&T Initial Br. at 35.

⁷²Id.

⁷³Vermont Phase II Order at 19.

⁷⁴AT&T Initial Br. at 36

Staff obtained in discovery. Verizon (then NYNEX) relied on that document to support its all fiber feeder assumption in its cost studies. “The Network of Tomorrow” points out that fiber feeder would make advanced services, especially video, possible. Unfortunately, this is the only support for Verizon’s proposal. Other than Verizon’s internal documentation and witness testimony stating that the company has chosen to install 100% fiber feeder, Verizon has not provided any study or concrete evidence showing that its proposal uses the most efficient cost minimizing technology currently available. Therefore, we conclude that Verizon has neither met its burden of proof nor shown that its proposal complies with TELRIC principles.⁷⁵

In any future TELRIC cost studies, Verizon should assume a fiber/copper breakpoint of 9,000 feet, or show why a different breakpoint is more appropriate.⁷⁶ While the 9,000 foot value is less than the 18,000 foot breakpoint used by the FCC in its High Cost Order,⁷⁷ we believe that a 9,000 foot breakpoint is more appropriate and supported by the testimony and argument of AT&T.⁷⁸ This conclusion is also consistent with the decision of the Vermont Public Service Board referenced by AT&T in its Brief.

⁷⁵Paradoxically, a recent FCC filing of Verizon stated that the company used “an all copper loop” architecture for loops that are shorter than the copper/fiber breakpoint. *In the Matter of Access Charge Reform*, CC Dockets 94-1 and 96-262, Verizon’s Cost Submission, November 16, 2001, Attachment D, pp. 4, 7.

⁷⁶If Verizon is going to continue to contend that an all fiber feeder network is cost efficient, it must provide evidence that the cost of an all fiber feeder network is less costly than a copper/fiber feeder architect.

⁷⁷High Cost Order at ¶ 85.

⁷⁸AT&T Initial Br. at 34.

For the purposes of setting rates in this proceeding, we accept AT&T's estimate that Verizon's methodology overstates the cost by \$0.96 per month and decrease the 2-wire analog loop rates we have calculated by that amount.⁷⁹ For all other loop-based rates, we assume that the rates from other states, on which we base our rates, reflect findings similar to ours.

2. Customer Locations

a. Background

One of the major drivers of the loop costs are the customer location assumptions used in the cost studies. Assumptions made regarding how far customers are located from Verizon's central office directly impact costs for outside plant, such as loops, that are used to serve customers.

b. Positions of the Parties

Verizon. For the purposes of their cost estimates, Verizon did not use actual customer locations. Instead, Verizon made customer location assumptions based upon its planners' understanding of the way Verizon's network is laid out. More specifically, for each of the three loop zones, Verizon's planners estimated the average distance to a customer. This was done through a combination of information contained in Verizon's databases and the opinion of its engineers and cost analysts. Verizon's databases were first sampled in order to estimate the average length of feeder plant.⁸⁰ For the distribution portion of the network, Verizon was only able to ascertain the longest

⁷⁹AT&T Initial Br. at 34 ("AT&T estimates that use of fiber in place of copper for feeder plant under 9,000 feet increases Verizon's overall statewide link costs by about \$0.96 per month.")

⁸⁰Tr. D-24, 25

loop in a carrier serving area (CSA). In its cost study, Verizon modeled the cost of reaching a customer that was located halfway between the CSA interface and the longest loop in the CSA, and that length was applied to all the CSA's customers' feeder lengths.

Verizon's methodology makes the implicit assumption that the customers are equidistant from the CSA interface. This follows from Verizon's model failing to capture the variation in customer locations within a CSA. Verizon's methodology does not introduce any bias if customers are uniformly distributed in a CSA, but if they are not uniformly distributed, the methodology can either inflate or understate costs. If customers are clustered close to the central office, the methodology could overstate costs. If customers are not clustered, or if they are clustered far away from the CSA interface, the methodology results in an understatement of costs.

Verizon states that it does not have information on the location of all of its customers' locations. It believes that its estimates accurately reflect the cost associated with providing a loop to the typical customer.⁸¹ Yet even the plant designers' tapering of the feeder and distribution plant was based on the planner's judgment of average conditions and not actual customer locations.

The extreme infirmity of Verizon's methodology was illustrated by the fact that Verizon's own witness agreed that its methodology

⁸¹Verizon Initial Br. at 33

would create identical costs for the following two entirely different customer location configurations:⁸²

- a. All customers are located a long way from the wire center but very close to one another.
- b. All customers are located a long way from the wire center and also even further from each other than from the wire center.

AT&T. AT&T initially presented a variation of the Hatfield model for use in calculating link costs. However it withdrew its testimony during the pendency of the case. It did argue in its Brief that Verizon's loop cost estimates should be adjusted to reflect the clustering of customers. AT&T points out that Verizon's method ignores the basic design concept of locating cross-connect boxes in areas where customer concentration is the greatest. While Verizon recommends "we reject Verizon's loop length assumptions" it does not propose an alternative estimate.⁸³

AT&T also argued that Verizon's "sample of only 450 loops is simply not large enough to produce a statistically significant approximation of the average loop length in all three density zones modeled by Verizon."⁸⁴

⁸²Tr. D-32.

⁸³ AT&T Initial Br. at 38.

⁸⁴AT&T Initial Br. at 38. Verizon defended the use of its sample by reference to the "informal discussions between Verizon (then NYNEX) and Staff on a representative sample size for a *pre*-TelAct incremental cost study that Verizon and Staff were considering." Verizon Initial Br. at 34. Whereas the purpose of the *pre*-TelAct cost study was different than the goal of the immediate undertaking, Verizon erred by assuming that both sample sizes should be equal in magnitude.

c. Analysis

We find that Verizon's methodology and assumptions regarding customer locations extreme over-simplifications. We agree with AT&T that Verizon's modeling of customer locations is flawed because of its failure to reflect the dispersion of customers.

While we have questions about the reasonableness of the size of the Verizon's loop sample, there has been no showing that the size of the sample leads to biased estimates of the loop length. The sample size used by Verizon could reduce our confidence in the loop cost estimates if: (1) we found compelling evidence that the sample size was too small,⁸⁵ and (2) we believed that the cost study was sound. But since the methodology used in the cost study for modeling customer locations is so flawed, the level of confidence that we can attach to the sample data is immaterial.⁸⁶

Though we have concerns about the loop cost estimates because of the methodology used to model customer locations, there is no compelling evidence indicating that the methodology either understates or overstates costs. Thus, we have not adjusted our loop cost estimates upward or downward to reflect the infirmities in Verizon's study. As we stated above, a good argument can be made for concluding that the Verizon's methodology

⁸⁵AT&T argued that the sample size was too small because the loop length confidence interval for urban and suburban areas overlapped. AT&T Brief at 38. It may be that the loop lengths are similar, and therefore there need not be a statistical difference in loop lengths, but there is still a difference in costs due to density (customers per route mile).

⁸⁶Stated differently, the average loop lengths produced by the sample may be unbiased estimates of the population loop lengths. Nevertheless, the study is flawed because of its failure to sensibly model the dispersion of customers.

understates or overstates costs. No one has presented compelling evidence that the bias falls in one direction or the other.

When Verizon files its next TELRIC study, we expect to see a vast improvement in this area. Specifically, we order Verizon to use a different customer location methodology and loop design methodology in its next cost study. To the extent that the next cost study relies upon another sample based loop study, Verizon must provide their own sampling approach. This new approach must employ a loop sample size that reflects the variation in the loop sizes in the different density zones. A larger sample size is needed zones where there is greater variation in loop lengths, i.e. rural zones.

3. Structure Sharing

a. Background

Outside plant structures are generally shared by LECs, cable operators, electric utilities, and others, including competitive access providers and interexchange carriers. To the extent that several utilities place cables in common trenches, or on common poles, it is appropriate to share the costs of these structures among the various users and assign a portion of the cost of these structures to the telephone company.”⁸⁷ Moreover, structure sharing also occurs within the operations of a single LEC. For example, a single pole often supports distribution, feeder, and interoffice cables.

⁸⁷High Cost Order at ¶ 241.

In this proceeding the Commission must make factual determinations regarding the accuracy of Verizon's shared structure estimates and determine if Verizon's model properly accounts for structure sharing.

b. Positions of the Parties

There was little discussion in the briefs concerning structure sharing. AT&T argues that Verizon has not properly evaluated the forward-looking costs of its poles and conduits. According to AT&T, Verizon's study does not assign a portion of the pole and conduit costs to toll or private line categories, which has the effect of allowing Verizon's monopoly links to provide a subsidy to its more competitive toll and private line services.⁸⁸

Verizon acknowledges that it did not make a "line item" study adjustment to share structure costs. That is, Verizon did not calculate total support structure costs and then explicitly allocate a portion of these costs to its operations. This "line item" method, which is used by the FCC, entails two steps. First, a cost model, or analyst, determines how many miles of pole lines, trenches, conduit, and buried plant is required to reach all customers. In the second step, a portion of the cost of these structures are assigned to the operations of the ILEC. The remaining structure expenses are presumed to be recovered from other companies.

The FCC explained as part of its exhaustive review of inputs to a cost model, why it is appropriate to share the cost of structure in a cost model:

⁸⁸AT&T Brief at 40

“Outside plant structures are generally shared by LECs, cable operators, electric utilities, and others, including competitive access providers and interexchange carriers. To the extent that several utilities place cables in common trenches, or on common poles, it is appropriate to share the costs of these structures among the various users and assign a portion of the cost of these structures to the telephone company.”⁸⁹

The FCC added, “the forward-looking practice of a carrier does not necessarily equate to the historical practice of the carrier.”⁹⁰ Rather than follow the FCC’s approach, Verizon appears to have largely relied on its historical ownership of poles to determine its sharing percentage.⁹¹

Verizon maintains, however, that it captured the sharing of poles and other structure in several different ways in the study.⁹² First, Verizon claims that its study appropriately recognized that many poles have multiple sheaths and that different sheaths could be used for loop or interoffice applications. Thus, the potential for sharing pole costs was reflected in the study by spreading the investment across multiple sheaths, thereby allocating a portion of the costs to interoffice transport. Second, Verizon claims that Mr. Baker testified that total loop plant was spread across both switched loops and private line loops, thus recognizing that a portion of the loop plant should appropriately be charged to private line. Because Verizon allocated structure costs in this

⁸⁹High Cost Order at ¶241. We took administrative notice of the FCC’s Order at Tr. O-77.

⁹⁰*Id.* at ¶ 247.

⁹¹Bench Exh. 73.

⁹²See e.g., Baker Pref. Reb. at 4

fashion, the company believes that it would amount to an inappropriate double-count if Verizon had also made an explicit allocation to toll and private line, as AT&T argues.⁹³ Finally, Verizon has adjusted its structural investment to reflect the portion of the poles it owns.⁹⁴

c. Analysis

According to Verizon witness Baker,⁹⁵ Verizon's cost study accounts for structure sharing among the multiple services provided by Verizon, as well as the sharing of structure between utilities. To account for multiple telephone sheaths per pole, Verizon employs a rather awkward adjustment to loop lengths. First, a "sheaths per pole" ratio is calculated. This is the weighted average number of sheaths the company estimates to be supported by a pole in a particular density zone.⁹⁶ Verizon then multiplies its estimated loop length by the "sheaths per pole" ratio to reduce the estimated length of the loop.⁹⁷ Verizon then calculates the number of poles necessary to support a loop based upon its adjusted loop length.⁹⁸ Finally, Verizon makes an adjustment to account

⁹³Verizon Reply at 17.

⁹⁴Bench. Exh. 73. The overwhelming majority of structure is associated with poles.

⁹⁵See Baker Pref. Reb. at 4 and Bench Exh. 73.

⁹⁶For example, Verizon estimates that in Urban areas 10% of poles will carry 1 telephone cable sheath and 90% will carry 2 telephone cable sheaths. Verizon then calculates a "sheaths per pole" ratio for urban areas. $[0.10 + (0.90 / 2) = 0.55]$ These values are based on Verizon's "judgment." Tr. D-62.

⁹⁷For example, "sheaths per pole" * estimated loop length = adjusted loop length. For Urban areas $0.55 * 1,1550 = 635$.

⁹⁸For example, the number of poles needed in an Urban zone is calculated as 1 (to account for first pole) plus $[635 \text{ feet (adjusted loop length) divided by } 125 \text{ feet (span between poles in urban zone)}]$ or $1 + (635/125) = 6.08$.

for poles that are shared with other utilities. This is achieved by estimating the proportion of poles used in the network that are owned by Verizon and then multiplying this factor by the number of poles necessary to support Verizon's length-adjusted loop.⁹⁹

Verizon claims that when all of these adjustments are combined, they account for structure sharing between multiple services and multiple utilities. We disagree. Verizon improperly assumes that the first pole of every loop is not shared between multiple sheaths. In order to work properly, the structure sharing ratio must be applied to all relevant support structures.¹⁰⁰ This assumption is also intuitively flawed because the poles closest to the central office are the most likely to carry multiple sheaths and the pole that is closest to the end user will likely hold both a distribution and drop cable.

Furthermore, Verizon's development of the percentage of the poles owned by itself makes no adjustment for the presumption that the first pole is not shared. While the result of this flaw may not appear to distort cost estimates to a large degree, it is nonetheless significant because the flaw becomes more prominent as the percentage of poles carrying multiple sheaths increases and, as loop lengths decrease -- both of which will occur simultaneously as you move from rural to urban settings. Thus, this flaw will distort estimated costs the most in urban areas where competition from

⁹⁹For example, the number of poles * the percentage of Verizon owned poles = the number of poles attributed to a given loop in Verizon's study. For Urban areas, $6.08 * 0.43 = 2.61$ poles.

¹⁰⁰Verizon presented no evidence to support its assumption that only one cable was hung on its first pole.

CLECs is most likely to occur. Therefore, we have eliminated from Verizon's study the assumption that there is no structure sharing on the first pole.

Verizon has used judgment to decide the degree to which there are multiple sheaths on a pole. As recently pointed out by the District Court of the District of Columbia, "calculation of forward-looking costs for a hypothetical network requires far more pervasive use of predictive judgments than does standard cost-of-service ratemaking..."¹⁰¹ We have reviewed the judgments made by Verizon's engineers regarding the number of sheaths per pole¹⁰² and we conclude that the values that they adopted are reasonable.

Finally, Verizon has adjusted its cost estimates to reflect that it does not own all of its structure. Initially the cost study reduced the pole investment by 35% to reflect poles owned by other utilities. In response to a bench request, it stated that it would be appropriate to reduce costs by 57% to reflect poles owned by other utilities.¹⁰³

In order to check the reasonableness of the 57% value, we have compared Verizon's structure sharing number with the values adopted by the FCC. Verizon's corrected value, which results in an assignment of 43% of pole investment to Verizon's operations, constitutes a greater degree of sharing than adopted by the FCC for use in its forward-looking economic cost

¹⁰¹Sprint Communications Inc. Co. v. Federal Communications Commission, D.C. Ct. App., No. 01-1076, December 28, 2001, *slip op.*

¹⁰²See Bench Exh. 73.

¹⁰³Bench Exh. 73; Tr. D-62-63. Verizon did not file a revised study that adjusts for this error.

model, HCPM.¹⁰⁴ Therefore, despite the fact that it has used historical data to determine the sharing of structure expense with other utilities, we find the value calculated by Verizon, 43%, to be reasonable.

Verizon's treatment of conduit is more problematic. First, Verizon implicitly assumes that it does not share conduit with other utilities. Unlike with poles, there is no adjustment to the structure costs to reflect sharing. Furthermore, it adjusts for utilization in a fashion that results in an overstatement of costs. Verizon divides its per duct conduit cost by the number of underground fiber cable sheaths that are assumed to be installed in the duct. The number of sheaths used in the division is not equal to the capacity of the duct, rather it is equal to the assumed level of demand. Verizon subsequently divides this quotient by an assumed utilization value of 50%. This results in a doubling of the conduit cost.¹⁰⁵ There is no need to adjust for utilization because the first division step was based on the level of demand, not the capacity of the duct.

Thus, in order to correct for the overstatement, we have adjusted the utilization rate for purposes of calculating our 2-wire analog rates. First, we adjusted the utilization rate to 100% to reflect that the development of the conduit cost per sheath began with the level of demand, not

¹⁰⁴According to Verizon 9, 37 and 55% of its lines are respectively located in urban, suburban, and urban areas. The FCC found in its High-Cost input order that an ILEC should be assigned 35% of the pole structure investment in urban areas and 50% of the investment in suburban and rural communities. High Cost Order at ¶ 243. This results in a weighted assignment of $.09 * .35 + (.37 + .55) * .5 = 49\%$.

¹⁰⁵For underground copper, the double counting is achieved by first dividing the cost of the duct by the capacity of a copper cable. Then, the cost per pair is doubled by assuming 50% utilization. Finally, Verizon again adjusts the conduit costs upward by dividing the quotient from the last step by 46%.

the level of capacity. We further increased the suburban and urban fill rates to 115 and 135%, respectively. We use rates greater than 100% because Verizon's spreadsheet does not have an explicit input for underground structure sharing. Therefore, we have achieved a similar affect by adjusting the utilization rate upward by the percentage of underground structure cost that the FCC found to be assignable to other utilities in its forward-looking cost model.¹⁰⁶

4. Outside Plant Costs

a. Background

The Commission must determine the prices Verizon will be permitted to charge competitors for accessing local loops and transport facilities. The term outside plant refers to the materials, such as copper and fiber optic cables, poles and conduit, which comprise Verizon's network. Just as these physical materials are fundamental to a telecommunications network, accurate outside plant cost estimates for these materials are essential cost model inputs for establishing just and reasonable UNE rates. If outside plant costs are understated in the cost model, the rates for UNE that use these facilities could be set too low. This may prevent Verizon from recovering the costs of an efficient firm and CLECs would be discouraged from building their own facilities. Conversely, if the outside plant costs are overstated, Verizon may recover more than a reasonable amount for providing access to UNEs and competition, even from efficient entrants, will be stifled.

¹⁰⁶High Cost Order at ¶243. The FCC concluded that there would be no structure sharing of conduit in rural areas.

The Commission must make factual determinations regarding the of the outside plant cost estimates, including the labor costs necessary to construct an efficient network.

b. Positions of the Parties

There was very little discussion in the briefs concerning outside plant costs. The most prominent sources of outside plant cost input data submitted in this proceeding are the data provided by Verizon as part of its cost study and the RUS data provided by David Gabel and Scott Kennedy. The Gabel-Kennedy data was provided for the record pursuant to a October 16, 1997 Procedural Order, and all parties were given the opportunity to serve discovery on Dr. Gabel and to ask him questions at the December 2, 1997 Technical Conference.¹⁰⁷ The Gabel/Kennedy data was also reviewed by the FCC and found to be reasonable in High Cost.¹⁰⁸

Verizon witness Stanley Baker argues that Verizon's material input costs should be adopted. He contends that for all materials, with the exception of poles, Verizon's input costs are reasonable because they are lower than the equivalent inputs derived from the Gabel-Kennedy study.¹⁰⁹

c. Analysis

We reject Verizon's explanations for why its costs are higher than the companies that are included in the Gabel/Kennedy analysis.

¹⁰⁷Tr. D; Bench Exh. 94.

¹⁰⁸For a description of the processes followed by the FCC to scrutinize the reasonableness of the Gabel-Kennedy research please refer to the High Cost Order, "Section V – C, Cable and Structure Costs", beginning at ¶ 83.

¹⁰⁹Baker Pref. Reb. at 2.

First, Verizon suggested that it might have higher supply expense loadings than the loadings used by the smaller firms.¹¹⁰ We do not find this argument to be compelling because Verizon is effectively arguing that they are less efficient than other firms and that it should be compensated for its inefficiency. We believe that Verizon's argument is contrary to the FCC's TELRIC pricing rules. These rules require that we model the cost of an efficient operator.

Verizon put greater emphasis on the proposition that its cable runs are shorter than the length of the cable installations included in the Gabel/Kennedy analysis. Verizon witness Baker pointed out that its underground cable installations were for short distances and this raised the effective cost per foot relative to a long-run of cable. Verizon argued that the cost is higher on a short-run of cable because the splicing cost is spread out over the number of feet in the cable run. Since splices are needed on both ends of the cable run, all else equal, the cost per foot of installing a short-run of cable will be greater than a long-run of cable.¹¹¹

There are two problems with Verizon's argument. First, Verizon largely speculates when it states that its cable runs are shorter than the cable runs included in the Gabel/Kennedy database. A more fundamental problem is that even if the Verizon cable runs are shorter, the reported costs are unreasonable. Consider Verizon's modeling of fiber underground cable in rural areas. Verizon assumed that 700 feet of underground

¹¹⁰Baker Pref. Reb. at 4.

¹¹¹ Id. at 6.

cable would be installed in a typical office. It also assumed that the average cable size would be 42 fibers.¹¹² Verizon reports that the cost per foot of the 42 fiber cable is \$26.05.¹¹³ The FCC determined that a slightly bigger, 48 fiber, underground cable costs \$3.94 per foot.¹¹⁴

Verizon is effectively arguing that its incremental splicing expense, over and above the splicing expenses included in the FCC value, is \$22.11 per foot, or \$15,477¹¹⁵ for the complete run of 700 feet. Assuming a loaded labor rate of \$50 per hour¹¹⁶ this corresponds to 310 hours for splicing time. Stated differently, Verizon effectively contends that it takes their workers approximately 8 weeks of work time over and above the splice time that is reflected in the FCC input values to splice a 700 foot cable. We find such a proposition to be unreasonable, to put it kindly, when the activity should only take a few hours to complete. This is but one example of many unreasonable inputs to the Verizon model.

We have compared Verizon's cable input values with those adopted by the FCC. Where Verizon's inputs were considerably higher we substituted the values adopted by the FCC for purposes of calculating our 2-wire analog loop rates. For all other rates, we assume that the rates of other states,

¹¹²Verizon assumed that there was an equal probability of a 72 and 12 fiber cable. The weighted average of these two sizes is 42. File linkme.xls, tab Fiber input, cells P15:P20.

¹¹³Baker Pref. Dir, Work Papers, Part A, page 28 revised.

¹¹⁴FCC, High Cost Order, Appendix A1, tab fibrcabl, cell C9. This is an installed cost that includes the cost of splicing, transport, and taxes.

¹¹⁵ $700 * \$22.11 = \$15,477$.

¹¹⁶Verizon reports that the fully loaded labor rate for an I & M repair technician is \$49.97 per hour. Baker Pref. Dir., Work Papers, Attachment 3, Exhibit X, page 1, line 14.

upon which we base our rates, reflect similar findings. We have accepted Verizon's cost estimates for poles and conduit.

5. Number of Zones

a. Background

The FCC's LCO requires state public utility commissions to establish a minimum of three geographically deaveraged pricing zones for unbundled network elements.¹¹⁷ The FCC found that deaveraging was consistent with the TelAct's intention of establishing rates that reflect the cost of providing interconnection and unbundled network elements.¹¹⁸ In *Iowa II*, the Supreme Court upheld the FCC's deaveraging rule, 47 C.F.R. §51.507(f).

b. Positions of the Parties

Verizon. Verizon developed the TELRIC of network elements statewide, as well as for three separate density zones: urban; suburban; and rural. With respect to the loop element, the density zones reflect the number of lines per square mile: urban – greater than 1500 lines; suburban – 151 to 1500 lines; and rural – less than 151 lines.¹¹⁹ Switching costs were developed to reflect the same density characteristics, except that remote switch investment is kept in the same density zone as its associated host switch.¹²⁰

AT&T. AT&T asserts it takes no position with regard to Verizon's three-zone proposal except to note that, if three zones are to be

¹¹⁷LCO at ¶ 765.

¹¹⁸LCO at ¶ 764-5.

¹¹⁹Baker Rev. Pref. Dir. at 8.

¹²⁰*Id.* at 13; Verizon Brief at 32.

used, the Verizon loop study should be based on a sample of sufficient size to obtain a reasonably representative loop length for each zone.

c. Analysis

At paragraph 765 of the LCO, the FCC provided guidance concerning geographic deaveraging when setting prices for interconnection and UNEs.

...Where such systems are not in existence, states shall create a minimum of three cost-related rate zones to implement deaveraged rates for interconnection and unbundled elements. A state may establish more than three zones where cost differences in geographic regions are such that it finds that additional zones are needed to adequately reflect the costs of interconnection and access to unbundled elements.

Since its proposal complies with the aforementioned directive of the FCC and this issue is not in dispute, we approve Verizon's use of three density zones in its studies. AT&T's concern regarding sample sizes and loop lengths will not be considered here as these matters are discussed above in the section of this document that deals with customer locations (Section VB2).

6. Sub-loop Unbundling, DS3, and DDS loops

a. Background

The FCC requires that ILECs provide sub-loop unbundling.¹²¹ The FCC defines the sub-loop as "portions of the loop that can be accessed at terminals in the incumbent's outside plant. An accessible

¹²¹ *In the Matter of Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-96 (Nov. 5, 1999).

terminal is a point on the loop where technicians can access the wire or fiber within the cable without removing a splice case to reach the wire or fiber within. [footnote omitted]"¹²² The FCC identified the Network Interface Device (NID) and the feeder distribution interface (FDI) as examples of where sub-loop unbundling as likely points of access.¹²³

b. Positions of the Parties

Verizon. Verizon derived the cost of subloops from the link portion of its TELRIC study.¹²⁴ All assumptions and investment data applicable to the distribution portion of the loop were employed as the starting point, to which the costs of a new OSS to facilitate access to the subloop at the FDI were added.¹²⁵ The resulting costs are developed and displayed in Attachment 1. Part C, page 1 of Mr. Anglin's testimony.

AT&T. AT&T did not present any evidence on this matter but did cross-examine Mr. Anglin about his study during the hearings.¹²⁶

c. Analysis

We reject Verizon's sub-loop unbundling prices because they are based on the loop study that we have rejected elsewhere in this Order. Our finding also applies to other loop prices, such as DS3 and DDS

¹²² Id. at ¶206.

¹²³ Id.

¹²⁴ Id.

¹²⁵ Id.

¹²⁶ See Tr. O.

loops. Instead, we set sub-loop unbundling prices at the average of the rates established in Rhode Island, Massachusetts, and Vermont.

7. Line Sharing

a. Background

i. Description of Line Sharing

Line sharing generally involves the use of the same physical loop facility by two different service providers for both voice and data applications.¹²⁷ Voice traffic is carried over the 0-4 kHz frequency while data traffic is carried in the available spectrum above 4 kHz.¹²⁸ The available spectrum above 4kHz is also referred to as the high frequency spectrum. Access to the high frequency spectrum unbundled network element (“HUNE”) enables CLECs to compete with incumbent LECs to provide to consumers xDSL-based services through telephone lines that the CLECs can share with ILECs.

ii. FCC Orders on ILEC Line Sharing Obligations

On December 9, 1999, the FCC issued its “Line Sharing Order” establishing the high frequency portion of the local loop as a new unbundled network element.¹²⁹ The FCC defined the high frequency portion of the loop as “the frequency range above the voiceband on a copper loop facility

¹²⁷Line splitting is the situation where the same physical loop facility is used by two different CLECs, one to provide voice service, the other to provide data service.

¹²⁸Verizon Initial Br. at 42.

¹²⁹In the Matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability And Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Third Report and Order CC Docket No. 98-147 and Fourth Report and Order in CC Docket No. 96-98, (rel. Dec. 9, 1999). (Line Sharing Order)

that is being used to carry analog circuit-switched voiceband transmissions.”¹³⁰

Consequently, a single copper loop is capable of simultaneously providing analog voice transmissions with other services that are characterized as advanced telecommunication services.

On January 19, 2001, the FCC issued an order addressing petitions for reconsideration and/or clarification of the Line Sharing Order.¹³¹ In the Line Sharing Reconsideration Order, the FCC clarified that the requirement to provide line sharing applies to the entire loop, even where the incumbent has deployed fiber in the loop (*e.g.*, where the loop is served by a remote terminal).¹³² The FCC also clarified that an ILEC must permit competing carriers providing voice service using the UNE-platform to either self-provision necessary equipment or partner with a competitive data carrier to provide xDSL service on the same line. The FCC denied, however, AT&T's request that the Commission clarify that ILECs must continue to provide xDSL services in the event customers choose to obtain voice service from a competing voice carrier on the same line because the FCC found that the Line Sharing Order contained no such requirement.¹³³ Lastly, the FCC decided that it would “address issues

¹³⁰Id. at ¶ 26.

¹³¹In the Matter of Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Third Report and Order on Reconsideration, CC Docket No. 98-147; Fourth Report and Order on Reconsideration, CC Docket No. 96-98; Third Further Notice of Proposed Rulemaking, CC Docket No. 98-147; Sixth Further Notice of Proposed Rulemaking, CC Docket No. 96-98, FCC 01-26, (rel. Jan. 19, 2001) (Line Sharing Reconsideration Order).

¹³²Id. at ¶ 10.

¹³³Line Sharing Reconsideration Order at ¶ 16.

closely associated with line splitting—including splitter ownership—in upcoming proceedings where the record better reflects these complex issues.”¹³⁴

iii. Statutes and Decisions On Pricing

(a) Statutes

When considering the pricing of the HUNE, there are three sections of the TelAct that are of particular interest. First, Section 252(d)(1) requires that state commission determinations of the just and reasonable rate for interconnection and access to UNEs must be based on the cost of provisioning (determined without reference to a rate-of-return or other rate-based proceeding), must be nondiscriminatory, and may include a reasonable profit.

Second, Section 254 of the Act addresses universal service issues. Subsection 254(k) states that a telecommunications carrier may not use services that are not competitive to subsidize services that are subject to competition. State commissions, with regard to intrastate services, must ensure that services which are included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services.

Finally, Section 706 of the Act requires each state commission to “encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . . by utilizing, in a manner consistent with the public interest, convenience, and

¹³⁴Line Sharing Reconsideration Order at ¶ 25. (Footnote Omitted)

necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.”

(b) FCC Decisions

As with the rates for other UNEs, it is the obligation of state commissions, and not the FCC, to determine the price of this UNE. The FCC, however, has issued several decisions which relate to and impact state decisions on HUNE pricing. Specifically, it is important to understand the history relating to pricing for xDSL services in order to understand the arguments relating to pricing for the HUNE.

When ILECs initially introduced xDSL service, a question arose regarding whether the service should be classified as an intrastate or an interstate product. The FCC asserted jurisdiction over the pricing of xDSL services because access to the Internet was deemed to be an interstate service.¹³⁵ Accordingly, the FCC concluded that it was appropriate for it, rather than the states, to establish the price of xDSL services provided by ILECs.

In this Order, we conclude our investigation of a new access offering filed by GTE that GTE calls its DSL Solutions-ADSL Service (“ADSL service”). We find that this offering, which permits Internet Service Providers (ISPs) to provide their end user customers with high-speed access to the Internet, is an interstate service and is properly tariffed at the federal level. (Footnote omitted).¹³⁶

¹³⁵ GTE Tel. Operating Cos. GTOC Transmittal No. 1148, CC Docket No. 98-79, FCC 98-292, *Memorandum Opinion and Order* (rel. Oct. 30, 1998) (GTE-DSL Order) at ¶ 1.

¹³⁶ Id.

In that proceeding, CLECs raised concerns that the ILECs were going to have an important competitive advantage over CLECs in providing advanced telecommunication services. In theory, an ILEC, whose loop cost contributions were already covered by the revenues from voice services, could price advanced telecommunications services lower than its competitors because the competitors would incur the additional production cost of providing a loop. The FCC found that it was not unfair to say that there is no direct cost of the loop when providing xDSL service and concluded that this pricing methodology did not result in a price squeeze. The FCC said that there would be no price squeeze as long as the CLEC used the loop to provide both voice and data services.¹³⁷ Effectively, the FCC was encouraging the CLECs not only to enter the data markets, but also to enter the voice markets.

The FCC reconsidered the potential for such a price squeeze in its Line Sharing Order, and noted that the TELRIC methodology that it adopted in its LCO does not directly address the pricing of the HUNE because TELRIC was designed to price discrete network elements or facilities, rather than a facility shared by two service providers.

In the case of line sharing, however, the facility in question is, by definition, also used for two incumbent LEC services (local exchange service and interstate access service). We are thus presented with the question of how to establish the forward looking economic cost of unbundled bandwidth on a transmission facility when the full embedded cost of

¹³⁷GTE-DSL Order at ¶ 31.

that facility is already being recovered through charges for jurisdictional services.¹³⁸

The impetus behind the Line Sharing Order is the goal to expedite the deployment of xDSL-based advanced services while simultaneously fostering meaningful competition in the provision of those services. The FCC stated:

Even if line sharing is made available to CLECs, however, it will not promote competition unless it is priced in a way that permits CLECs to enjoy the same economics of scale and scope as the ILECs.¹³⁹

Because line sharing was classified as an unbundled network element, it was within the FCC's jurisdiction to provide pricing guidance, but the FCC did not tell state commissions directly how to price this unbundled network element. The FCC stated:

We conclude that, in arbitrations and in setting interim prices, states may require that ILECs charge no more to CLECs for access to shared local loops than the amount of loop costs the ILEC allocated to ADSL services when it established its interstate retail rates for those services.¹⁴⁰

Further guidance was provided by the FCC in its Order regarding access reform issues:

The Line Sharing Order concluded that states should not permit ILECs to charge more to CLECs for access to shared local loops than the amount of loop costs the ILEC allocated to ADSL services when it

¹³⁸Line Sharing Order at ¶ 138.

¹³⁹*Id.* at ¶ 133, also citing LCO at ¶ 679.

¹⁴⁰Line Sharing Order at ¶ 139.

established its interstate retail rates for those services.¹⁴¹

(c) State Decisions

Again, it is up to the state commissions to determine whether CLECs providing advanced telecommunications services using the high frequency portion of the loop via line sharing must make a contribution towards the recovery of the recurring cost of the loop, and if so, what contribution must be made. To date many other state commissions have weighed in on the HUNE pricing issue. The HUNE prices established in these proceedings have varied from greatly.

The states which have found it appropriate to set a non-zero price for the HUNE generally believe that the costs of loops should be borne by all those who use the loop. For example, the Connecticut Department found:

...the loop costs can be reasonably allocated among the services that use the loop. Obviously, the loop was constructed for more than basic local exchange service and cannot be considered the sole cost responsibility of basic local exchange service. New uses of the loop must be encouraged and should reasonably share in the cost of providing the loop.¹⁴²

Similarly, the Washington Utilities and Transportation Commission adopted a positive HUNE rate.

¹⁴¹In the Matter of Access Charge Reform, FCC 00-193, Sixth Report and Order in CC Docket Nos. 96-262 and 94-1, Report and Order in CC Docket No. 99-249, Eleventh Report and Order in CC Docket No. 96-45 (May 31, 2000) at ¶ 98.

¹⁴²Application of the Southern New England Telephone Company for a Tariff to Introduce Unbundled Network Elements, Connecticut Department of Public Utility Control Docket No. 00-05-06, dated June 13, 2001 at 20.

Because the loop is used to provide both basic exchange and advanced telecommunications service, recovering the entire cost of the loop from voice services would violate Section 254(k) of the Act. Because the cost of the loop is considered to be a shared cost for the provision of voice and advanced services, we conclude that a portion of the cost of the loop should be recovered from LECs providing advanced services and specifically digital subscriber line services.¹⁴³

Networks are increasingly being designed at this time to provide advanced telecommunication services. Due to the more stringent technical requirements of providing advanced telecommunications services, the incremental cost of these products is not zero. Therefore, we believe it is appropriate to recover a portion of the cost of the loop from LECs providing advanced telecommunication services.”¹⁴⁴

In other states, such as New York and Texas, the regulatory commissions have decided that there should be no charge for the HUNE. This may be partly due to the ILEC not attributing any loop costs to its xDSL services and the state commissions’ desire to promote advanced services without having to consider price squeezes. Consider the decision of the Texas PUC in response to SBC’s suggestion that the HUNE rate be set at 50% of the UNE loop rate.

During the hearing, SBC testified that the amount of the local loop costs allocated to its retail ADSL offering, in its cost study, was \$0.00. Therefore, the Arbitrators find the monthly recurring rate SWBT should charge for the HFPL UNE, is \$0. The Arbitrators believe that not only would this rate

¹⁴³In the Matter of the Continued Costing and Pricing of Unbundled Network Elements, Transport, and Termination, Thirteenth Supplemental Order - Phase A, WUTC Docket No. UT-003013, released January 2001, at ¶ 57.

¹⁴⁴Id. at ¶ 60.

address the FCC's concern regarding a potential price squeeze, but it would also be consistent with the general pro-competitive purpose underlying the TELRIC principles. This rate is subject to true up based on the rates set by the Commission in the final proceeding.¹⁴⁵ (Footnotes Omitted)

b. Positions of the Parties

Verizon. The cost study Verizon has filed with the Commission does not contain any rates for the loop portion of the HUNE, effectively a zero price.¹⁴⁶ While Verizon does not comment on its pricing decision in its briefs, there was extensive discussion of this issue at the hearings. Mr. Anglin admitted that his study did not seek to recover the recurring costs associated with Verizon's provisioning of line sharing to a CLEC.¹⁴⁷ Mr. Anglin stated the reason for this decision was the limitations placed on Verizon by the FCC's Line Sharing Order, i.e. Verizon could not charge CLECs anymore than Verizon charged itself for xDSL.¹⁴⁸ He also stated, however, his personal belief that, absent regulatory limitations, Verizon should try to recover some of the costs associated with line sharing from the CLEC.¹⁴⁹

AT&T. AT&T does not address HUNE pricing issues in its briefs.

¹⁴⁵ See Petition of Covad Communications Co. and Rhythms Links Inc. Against Southwestern Bell Telephone Co. and GTE Southwest Inc. for Post-Interconnection Dispute Resolution and Arbitration under the Telecommunications Act of 1996 Regarding Rates, Terms, Conditions and Related Arrangements for Line Sharing, Texas P.U.C. Docket No. 22168, Interim Award (June 2000), at page 27.

¹⁴⁶ Anglin Pref. Dir. Attachment 1, § N.

¹⁴⁷ Tr. O-115.

¹⁴⁸ Id.

¹⁴⁹ Id. at 118.

c. Analysis

The sparse comments in the briefs concerning the pricing of line sharing reflect the perverse incentives of telecommunications regulation. Verizon may not have proposed a non-zero price for line splitting because to do so would require its xDSL spinoff, VADI, to pay the same rates. The CLECs did not oppose the zero price because it directly benefits them. Thus, we are left with a very sparse record on a pricing issue that has important policy implications.

There are several reasons a state commission could decide to establish a positive HUNE rate. First, the rate would recover costs from the services that cause cost to be incurred. Since a loop is necessary to transmit both voice and data, it is appropriate that both services make a contribution towards the cost of providing a loop. Second, advanced telecommunications services increase the cost of network design and construction because advanced communications have more stringent technical requirements than voice communications.¹⁵⁰ Third, in other unregulated markets, suppliers spend money in order that their infrastructure can be used to provide advanced telecommunications services. For example, cable modem providers must make substantial investments in their network to be able to provide competitive, high speed data services.

¹⁵⁰For example, the incompatibility of some advanced technologies require that some services, such as xDSL and T-1 lines, are placed in separate binder groups. This could result in an increase in network costs by lowering utilization rates. See Bench. Exh. 131.

A zero HUNE price would not promote the use of advanced service on a competitively neutral basis. A zero price would give xDSL providers a competitive advantage over other types of high-speed Internet access providers, such as satellite, wireless, and cable companies, who must pay for the facilities they use to provide high speed data services. Alternative providers of high-speed data services will have a reduced incentive to invest if they are competing against xDSL providers whose operations are in effect subsidized. Further, the xDSL providers themselves will have significantly reduced incentive to build their own facilities and to invest in alternative technologies if they can access the existing high frequency loop for free.

Moreover, a price of zero for the high frequency portion of the loop might afford xDSL providers the opportunity to engage in precisely the type of price squeezing against competing technologies that the FCC feared the ILECs could impose against the xDSL providers.

Finally, Section 254(k) arguably requires that the Commission ensure that basic exchange service bears no more than a reasonable share of the cost of the loop, and that loop costs must be shared by all services utilizing the loop including advanced services.

There are also several reasons a state commission would choose to set a zero rate for line sharing. First, the TelAct and the FCC's pricing rules are designed to foster fair and equal competition among providers and to foster technological innovation through investment in telecommunications facilities. Section 706 of the Act instructs commissions to “adopt policies that will

promote the advancement of advanced telecommunications services.” Arguably, if a state Commission were to adopt a zero recurring price for the HUNE, the goal of Section 706 may be satisfied because such a policy would promote the deployment of xDSL services.

Second, if the Commission were to set a non-zero HUNE rate there is a chance that a price squeeze could occur. A price squeeze results when the production costs of an efficient provider exceed the retail rate of the product in question. For example, consider an xDSL service provided by an ILEC at a retail rate of \$29.00. If the cost to the ILEC to provide this service is \$20.00, there exists a margin of \$9.00 with which to cover common costs and earn a profit. Now let's assume that a competing CLEC prices its comparable xDSL product at \$29.00 and that the CLEC incurs the same direct costs as the ILEC. Let us also assume that this CLEC is required to pay a HUNE rate of \$10.00 per month. In this situation, the CLEC will not offer xDSL service because no matter how efficient the company is the service is unprofitable. That is, the combination of the HUNE contribution and the direct costs incurred by the CLEC will result in a total cost that exceeds the current retail price for the service in question. If this were to occur, there might be a significant slowdown in the deployment of advanced services by CLECs and a re-emergence of a monopoly over these services by the ILEC.

This is obviously a very complex decision, with many factors to be weighed and much additional data and information needed to better inform our decision. Understandably, the proper solution will require the

Commission to carefully balance many price and policy objectives as they relate specifically to Maine. Accordingly, for the purposes of this proceeding, we will accept the rate proposed by Verizon, i.e. a zero price, on an interim basis only. In the near future, we will institute a separate proceeding to determine whether and how much a CLEC should be charged for the HUNE.

8. Provision of Linesplitters for CLECs Using UNE-P

a. Background

Worldcom has requested that we require Verizon to provide line splitters for CLECs' use when line splitting on UNE-P service. Worldcom argues that the splitter is a feature, functionality, or capability of the loop and therefore Verizon must provide it as part of UNE-P service.¹⁵¹

b. Position of Verizon

Verizon argues that there are various changes that are required to Verizon's OSSs to facilitate a line splitting arrangement in the UNE platform context.¹⁵² Verizon claims that the FCC has stated that the best place to develop these procedures are in on-going industry collaboratives, such as the one in New York. Verizon states that the process is underway in New York, and thus, Verizon is fully complying with its line splitting obligation.¹⁵³

c. Analysis

We decline Worldcom's request at this time. We direct Verizon, however, to provide us with a monthly update of the proceedings

¹⁵¹Worldcom Initial Br. at 10.

¹⁵²Verizon Reply Br. at 24.

¹⁵³Id.

in New York on this issue. Further, we order Verizon to file a tariff offering this service within 30 days of a final determination in New York.

C. Local Switching

1. Background

In paragraph 410 of the LCO, the FCC concluded that ILECs must provide local switching as an unbundled network element. It defined local switching as an element that includes the basic function of connecting lines and trunks as well as vertical switching features, such as custom calling and CLASS features.¹⁵⁴ The Commission must determine the prices Verizon will be permitted to charge CLECs for providing access to the full capabilities and functions of its switching machines. The price of local switching will have a considerable impact on the existence of effective competition because switching is one of the three primary types of facilities used to provide voice services. Along with the loop and transport, switching facilities constitute the network facilities that are need to provide basic voice service.¹⁵⁵

Specifically at issue with regard to switching is whether the cost model proposed by Verizon, Switching Cost Information System (SCIS), is sound and whether the labor and material inputs used in the model are valid. There has been a great deal of testimony submitted supporting and opposing the use of Verizon's SCIS cost model. Verizon represents the SCIS model as a

¹⁵⁴ Custom calling features, such as call waiting, three-way calling, and call forwarding, are switch-based calling functions. CLASS features, such as caller ID, are number translation services that are based on the availability of interoffice signaling.

¹⁵⁵ A loop is terminated on a switching machine. The switching machine, in turn, connects a caller to another customer who obtains service from the same switching machine, or puts the call through to another switch. Transport facilities are used to connect switching machines together.

forward-looking model that uses Maine specific inputs to accurately represent future switching costs that Verizon expects to incur.¹⁵⁶ Alternatively, the other parties to this proceeding have generally described the output received from Verizon's treatment of the SCIS model as inaccurate and overstated.¹⁵⁷ The majority of these allegations refer to improper assumptions concerning the cost of purchasing switches and grossly inflated labor time estimates.

If the SCIS model is found to provide unreasonable cost estimates, the Commission must consider alternative information. The record in this proceeding includes switching cost data that was produced by the Commission's consultant, David Gabel, and his associate Scott Kennedy, that was provided to the parties through an October 16, 1997 procedural order and attachments. The switching data set was constructed by collecting information from the depreciation reports of the Regional Bell Operating Companies (RBOCs). Data for smaller switching machines was obtained from the Rural Utility Service (RUS). RUS was also the source for Gabel and Kennedy's data on the cost of installing cables, conduit and poles.

The parties were allowed to serve discovery questions on Dr. Gabel in addition to asking him questions at the December 2, 1997 Technical Conference.¹⁵⁸ In addition, the FCC conducted an even more exhaustive process when it considered using the Gabel-Kennedy Data in its Universal

¹⁵⁶Verizon Initial Br. at 30.

¹⁵⁷AT&T Initial Br. at 44; Mid-Maine Reply Br. at 2.

¹⁵⁸See Tr. D.

Service docket.¹⁵⁹ The FCC ultimately decided to use the data in its High Cost Model for universal service to establish both the cost of digital switching equipment and the cost of installing cables, poles, and conduit.¹⁶⁰

2. Positions of the Parties

AT&T. AT&T takes issue with Verizon's proposed installation factor of approximately 57%, and power factor of approximately 14%, both of which are added to Verizon's material costs.¹⁶¹ AT&T claims that these factors are arbitrarily based on old data and that Verizon has failed to provide adequate supporting analysis showing how these factors are representative of the equipment that would be installed to create a forward-looking TELRIC network. AT&T also claims that Verizon has "double-counted its cost of investment in the power plant by including this cost as part of both switching and collocation costs."¹⁶²

Verizon. Verizon responds to AT&T's criticism by asserting that its proposed installation and power factors accurately reflect Verizon Maine's actual past experience in installing switches. Verizon argues that AT&T is only willing to look backwards to Verizon's actual past costs if it yields a lower cost

¹⁵⁹For a description of the process, see High Cost Order at ¶¶ 7, 10.

¹⁶⁰For a description of the processes followed by the FCC to scrutinize the reasonableness of the Gabel-Kennedy research, see High Cost Order, Section V – C, "Cable and Structure Costs," beginning at ¶ 83.

¹⁶¹AT&T Initial Br. at 45 citing BA Exh. 17.

¹⁶²AT&T Initial Br. at 46 citing Cohen, Tr. I-103.

estimate, otherwise it argues for forward-looking costs.¹⁶³ Verizon maintains that the DC power equipment reflected in the Collocation Study is entirely different from the equipment reflected in the power factor for switching costs in the recurring cost study. Therefore, there is no double counting of costs.¹⁶⁴

Verizon also addresses AT&T's general criticism of its utilization or fill factors.¹⁶⁵ Verizon claims that AT&T's arguments are without merit as the switching fill factors used by Verizon in its TELRIC study, which range from 72 percent up to 90 percent, are reasonable, consistent with sound engineering, and properly take into account the way facilities will be deployed to meet the needs not only of Verizon, but those CLECs who obtain UNEs from Verizon.¹⁶⁶

Verizon's position on the Gabel/Kennedy data is discussed in detail below.

3. Analysis

In assessing the efficacy of Verizon's SCIS cost model we must consider the reasonableness of both the model's inputs and the output that is produced. An examination of the cost estimates on the record in this proceeding, including Verizon-GTE costs estimates and the Gabel-Kennedy

¹⁶³Verizon Reply Br. at 21 ("AT&T's claims here are ironic. AT&T opposes the use of installation factors which accurately reflect Verizon actual past experience in installing switches, even as it argues for the use of Verizon's past experience for vendor switch discounts.").

¹⁶⁴Verizon Reply Br. at 22.

¹⁶⁵See AT&T Initial Br. at 41 for AT&T's criticism of Verizon's proposed fill factors.

¹⁶⁶Verizon Reply Br. at 23.

data, indicates that the SCIS cost study submitted by Verizon does not provide cost estimates that are appropriate for setting local switching rates in Maine.

In response to Examiner's Data Request 8-30, Verizon provided a copy of its witness', Timothy Tardiff, testimony from the State of Washington. Tardiff identified the testimony in his rebuttal testimony in this proceeding.¹⁶⁷ Tardiff's Washington testimony provided a comparison of GTE's incurred switch costs with the cost estimates included in AT&T's Hatfield¹⁶⁸ model. Specifically, he made a comparison between the output of the Hatfield Model, Release 3.1 and actual contracts signed by GTE that were received from various switch manufacturers in a competitive bidding process.¹⁶⁹ Dr. Tardiff determined that the cost estimates produced by the Hatfield model were unjustifiably low when compared to actual data from California.¹⁷⁰ Specifically, he concluded on behalf of Verizon that the Hatfield Model "... does not provide a proper basis for valid and reliable forward looking costs."¹⁷¹ He further concluded:

The data from competitive bids were the lifecycle costs per line for individual switches, and therefore, considered both growth and the higher cost of adding lines to an existing switch. Thus, a switch size/cost per line curve based on the GTE data produces

¹⁶⁷Tardiff Pref. Dir.

¹⁶⁸The Hatfield Model is a cost model developed by Hatfield Associates Incorporated. AT&T had initially submitted Release 4.0 of that model in this proceeding but later withdrew the model from the proceeding.

¹⁶⁹Gregory M Duncan and Timothy J Tardiff, "Economic Evaluation of the Hatfield Model, Release 3.1." filed with the Washington Utilities and Transportation Commission, March 28, 1997.

¹⁷⁰Tr. O-181-182.

¹⁷¹Tardiff Pref. Reb. at 2.

switching investments that are more than double or those produced by the Hatfield function for BA-ME.¹⁷²

When a similar comparison is made between the GTE data noted above and Verizon Maine's SCIS cost model output, it reveals that the SCIS outputs are also double the Verizon-GTE data.¹⁷³

| <u>Model</u> | | <u>Reference</u> | <u>Notes</u> |
|---|------------------------------|------------------|---|
| Verizon-ME SCIS | | | |
| Total Switching Cost Estimate | \$478,700,000 ¹⁷⁴ | Exhibit 12-7 | |
| Verizon GTE Comparison | | | |
| Fixed Cost Per Switch | \$781,599 | Exhibit 8-30 | Based on Tardiff's analysis |
| Marginal Cost Per Line | \$97.30 | Exhibit 8-30 | Based on Tardiff's analysis |
| Number of Switches in Maine | 139 | Exhibit 12-6 | SCIS inputs: 139 switches = 14 Host + 125 Remotes |
| Number of Lines in Maine | 634,915 | Exhibit 12-6 | SCIS inputs: 634,915 lines = 270,429 Host + 364,486 Remote. |
| Total Switching Cost Estimate | \$170,419,491 | | \$170,419,491 = (139 * \$781,599) + (634,519 * \$97.30) |
| SCIS vs. GTE Data | | | |
| Ratio of Verizon SCIS to Verizon GTE Comparison | 281% | | 281% or 2.81:1 = \$478,700,000 / \$170,419,491 |

The table above shows that Verizon's SCIS cost model estimates total switching costs that are more than two and one-half times the value of the GTE cost

¹⁷²Id. at 20.

¹⁷³The Bench requested that Verizon provide the comparison but Verizon failed to respond to the Bench Request. See Tr. O-189, 190.

¹⁷⁴The \$478.7m includes \$54.44 million of investment for power.

comparison used by Verizon as the standard to test the reasonableness of the Hatfield model. Applying the same reasoning Verizon-GTE used in Washington, we reject Verizon's SCIS end-office cost model because it provides cost estimates that are unreasonably high. This conclusion is consistent with Verizon's own cost analysis concerning the Hatfield model and also with the findings of regulators in other jurisdictions.¹⁷⁵

As a secondary matter, the output provided by the SCIS model also provides unreasonable cost estimates when compared to the switching cost data provided by David Gabel and Scott Kennedy and subsequently adopted, with slight modifications, by the FCC. The SCIS investment estimate is approximately 580% higher than the investment value generated by the FCC's switching investment values.

Verizon argued that the Gabel-Kennedy report failed to produce accurate forward-looking switch investments for Maine. According to Verizon, the Gabel-Kennedy data set was flawed because it did not contain any data from Maine, excluded a limited number of outliers, and relied on a price index that showed that the cost of digital switches declined over time, a phenomena that was not experienced by Verizon. Verizon notes that "[w]hile the

¹⁷⁵For example, regulators in New York, New Mexico, and Washington have also declined to use the SCIS model because the cost estimates were unreasonably high. See: New York Public Service Commission *Opinion and Order Setting Rates for First Group of Network Elements, Joint Complaint of AT&T Communications of New York, Inc. et al. Against the New York Telephone Company and Sections of New York Telephone Company's Tariff*, Docket 95-C-0657 (April 1, 1997) at 84-86, New Mexico Public Regulation Commission *In The Matter of The Interconnection Contract Between AT&T Communications of The Mountain States, Inc., And U S WEST Communications, Inc., Pursuant to 47 U.S.C. Section 252*, New Mexico State Corporation Commission, Docket No. 96_411_TC (March 27, 1997), ¶¶124 and 125, and Washington Utilities and Transportation Commission *Eighth Supplemental Order In the Matter of the Pricing Proceeding for Interconnection, Unbundled Elements, Transport and Termination, and Resale* Docket UT-960369 (May 11, 1998) at ¶ 302.

national [telephone price index for] digital switch component decreased 43% between 1987 and 1995, the more local, regional JPC index [that track's Verizon's purchasing history] displayed a 31.6% increase for the same time period." Verizon concludes, "Dr. Gabel has mistakenly formulated a `national' proxy cost for switching entirely inappropriate for estimating the forward-looking switching costs to serve Maine."¹⁷⁶

Verizon is effectively arguing that its rates should be based on prices that are totally out-of-line with the national trend in prices. We reject this argument as it is contrary to TELRIC pricing principles and would be an impediment to competition.

While the decision to reject Verizon's SCIS cost model is based predominantly upon the unreasonableness of the model's output, we also have concerns about how the model operates. During the December 2, 1997 technical conference, Verizon's witnesses were unable to answer several questions pertaining to the operation of the SCIS cost model.¹⁷⁷ We cannot conclude that the model is reasonable when Verizon's own witnesses are unable to explain how the model operates. We find, therefore, based upon the record in this proceeding of the unreasonableness of Verizon's proposed SCIS model for accurate estimating switching costs, that Verizon's proposed end-office switching costs should be rejected and that the Commission should instead establish port and per minute switching rates based on the FCC data found at paragraph 296 of

¹⁷⁶Verizon Initial Br. at 37-38.

¹⁷⁷See Tr. D at 43, 48, and 63.

the High Cost Order – the Gabel/Kennedy data (as modified by the FCC to make it consistent with other sources of data in the FCC’s final data set.)¹⁷⁸

We find the Gabel-Kennedy data more reliable than the Verizon data based upon both our own review of that data as well as the record developed by the FCC when it considered using the data. Indeed, many of Verizon’s arguments against using the RUS data in this proceeding were raised in the High Cost Docket where the FCC found that the litany of alleged weaknesses and flaws in the RUS study, and the proposed modifications, were unpersuasive.¹⁷⁹

Specifically, because the methodology adopted in the High Cost Order already accounts for installation factors, power factors, and LEC engineering, we reject Verizon’s proposed adjustments to the Gabel-Kennedy data. When compared to the factors approved by the FCC, Verizon’s proposals are unacceptable and would result in an overstatement of costs. Furthermore, since Verizon’s switching cost proposal has been rejected in favor of the more reasonable estimates provided by the High Cost Order, we will also approve the switching port fill rate of 94% that was adopted by the FCC.¹⁸⁰

¹⁷⁸This data, and its derivation, is more completely explained in the FCC’s High Cost Order at ¶¶ 286-319 and Attachment C. The complete dataset consists of publicly available data on the cost of purchasing and installing switches gathered by the FCC and the Bureau of Economic Analysis. This information was gathered from depreciation reports filed by LECs at the FCC. Whereas the depreciation data excluded observations for switches with less than 1000 lines, the FCC used the Gabel-Kennedy data, which reflect information on switches with less than 1,000 lines, to complete the dataset. High Cost Order at ¶ 299. When merging the two data sets, the Commission made certain adjustments were discussed at ¶ 304-307 of the High Cost Order.

¹⁷⁹High Cost Order at ¶¶ 114, 297, 319.

¹⁸⁰For a complete discussion of this fill rate see: High Cost Order at ¶¶ 330-332.

We have chosen to base the TELRIC prices on the FCC estimates of the cost of switching, rather than the GTE-California data that was introduced by Verizon, because the former source of data was thoroughly evaluated in this docket. The parties in this proceeding had the opportunity to conduct discovery, participate in a technical conference in which the data was discussed, and submit testimony. Furthermore, the data was comprehensively reviewed and employed by the FCC in its High Cost Order. The GTE-California data has not been subject to the same thorough analysis and therefore we have not used it to set the switching rates.

Tandem switches route calls between switches. The tandem office equipment consists of the switch and trunk termination equipment necessary to route calls to and from the tandem and other switches. Verizon's TELRIC study places tandems at their current locations in Maine. No party challenged Verizon's modeling of tandem switching.

We accept the Verizon's tandem investment estimates. The rates we adopt today are based upon use of Verizon's proposals with modification to reflect our decisions regarding the cost-of-money, depreciation, and common costs.

D. Interoffice Transport

1. Background

Interoffice transport consists of the transmission facilities, *i.e.* large capacity cables and associated electronic equipment, used to transport

calls between two switches, including end office as well as tandem switches.¹⁸¹ Verizon's study assumes interoffice transport facilities (both for dedicated and common transport)¹⁸² using Synchronous Optical Network ("SONET")¹⁸³ systems with a two-fiber Bi-Directional Line Switched Ring architecture.¹⁸⁴ The UNE rate for transport is impacted by several assumptions, including fill factors for the cables, installation factors to account for the costs of installing the cable,¹⁸⁵ and the expected number of minutes of use.

Because we have already made findings relating to fill factors,¹⁸⁶ the discussion in this section is limited to whether Verizon's minutes of use assumptions properly account for forward looking usage of interoffice transport and the reasonableness of Verizon's installation factor.

As explained by the FCC, the price of a network element is derived by dividing the total cost of providing a network element by the demand associated with the element:

Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility that will be "filled" with network

¹⁸¹ AT&T Initial Br. at 25.

¹⁸² Dedicated transport refers to an interoffice transport facility that is dedicated for use by a single carrier. The cost of this facility is not traffic sensitive and is recovered through a fixed monthly charge. An interoffice facility that is shared among multiple carriers is called common transport. The cost of this facility is traffic sensitive and is recovered through a per minute rate.

¹⁸³ SONET is a set of standards that define the physical interfaces, signal rates and signal protocols used by manufacturers when building high capacity fiber optic transmission systems.

¹⁸⁴ Verizon Brief at 31.

¹⁸⁵ The installation factor is used to gross-up the material price to the total cost of installing the equipment. The gross-up is used to capture the labor installation costs and other miscellaneous expenses.

¹⁸⁶ Section V,A4.

usage); that is, the per-unit costs associated with a particular element must be derived by dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element. Directly attributable forward-looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible.[footnote omitted]¹⁸⁷

In order to insure that prices are established pursuant to the FCC's pricing rules, we must consider both the reasonableness the demand data that was used to derive the prices. For example, a portion of the cost of the interoffice network is recovered through a per minute charge. If the level of demand is understated, the denominator in the TELRIC cost calculation will be too low and it will result in too high of a price for transport.

2. Positions of the Parties

Verizon. According to Verizon, its study reflects a forward-looking technology consistent with its current standard design for all new interoffice transport systems. The results of the interoffice transport studies for both common and dedicated transport are summarized in Attachment 1, Section C of Verizon's study which is attached to Mr. Baker's testimony.¹⁸⁸

¹⁸⁷LCO at ¶ 682.

¹⁸⁸Verizon Initial Br. at 31.

AT&T. AT&T takes issue with the fact that Verizon developed shared transport prices without accounting for growth in total minutes of use.¹⁸⁹ AT&T also argues that Verizon's installation factor of 1.45 is inflated and totally unsupported by the record.

3. Analysis

We agree with AT&T's arguments concerning the need for Verizon's cost study to use forecasted growth minutes of use rather than its actual usage from March of 1996.¹⁹⁰ However, we believe that the changes we have already made to Verizon's fill factors for interoffice cable will provide the necessary reduction to Verizon's rates. Specifically, in Section V, A 4c above, we increased the fill factor for interoffice facilities from 50% to 60%. This input change implicitly reflects the growth in network usage and therefore it is not necessary to also simultaneously increase the minutes of use.

For example, if Verizon originally assumed 5 trunks with 100 minutes of use, the total minutes of use assumed for calculating a per minute rate was 500. In the portion of the order that addresses utilization we increased the fill rate from 50 to 60%. This increase effectively increases the number of trunks by twenty percent, or in our example by one trunk. By increasing the trunks assumed to 6, we increase the minutes of use to 600 and thereby decreased per minute charges. We see no need, based upon the record before

¹⁸⁹ AT&T Initial Br. at 48.

¹⁹⁰ See Ex. BA-17, Workpapers Part C, WP 7.5.

us, to increase the minutes of use beyond the increase caused by the higher fill factors.

With regard to Verizon's proposed installation factor of 1.45, we find that while AT&T argued against Verizon's proposal, it did not provide any evidence contradicting Verizon's proposed installation factor. It is difficult to say if an installation factor is too high or too low without simultaneously considering what the installation factor is multiplied against. As we stated above, the installation factor is multiplied against the material price in order to estimate the total installed cost of facilities. The issue is not if the material price or installation factor is too high or too low. Rather we are interested in whether the product of these two numbers, the installed cost, is reasonable. Based on our review of Verizon's cost study, along with AT&T's failure to make any showing that the product of this calculation was unreasonable, we conclude that the 1.45 value is reasonable.¹⁹¹

E. Other Recurring Rates

1. Dark Fiber

a. Background

The TELRIC cost of dark fiber as a network element was developed in the supplemental filing sponsored by Mr. Anglin as both an interoffice element (Loop Dark Fiber) where dark fiber is used interoffice, i.e.

¹⁹¹This recommendation is consistent with the decision reached by the Vermont PSB when considering this same question. See Investigation into New England Telephone and Telegraph Company's (NET's) tariff filing re: Open Network Architecture, including the unbundling of NET's network, expanded interconnection, and intelligent networks in re: Phase II, Module 2 – Cost Studies Vermont Public Service Board, Docket No.5713, dated 2/4/200, at page 30

between two central offices, and a Channel Termination Dark Fiber for fiber between a CLEC's POP and the Verizon end office serving that POP.¹⁹² The cost elements include a monthly variable cost per quarter mile, a monthly fixed cost per serving wire center, and a monthly fixed cost per customer premises (if applicable).

b. Positions of the Parties

Verizon. Verizon's testimony on this subject describes how the charges were derived. The monthly fixed costs in the wire center and the per quarter mile variable costs were developed in the initial TELRIC cost study. While dark fiber was not listed in the initial study as a UNE, Verizon did include a price for fiber. Verizon uses this fiber rate from the initial study as the rate for dark fiber. The dark fiber costs incurred at the customer premises were developed from vendor prices for the mix of equipment typically employed at customer locations, to which an installation factor and carrying charges factors were applied to produce a monthly recurring cost.¹⁹³

AT&T. AT&T did not present any testimony on this issue.

c. Analysis

We reject Verizon's dark fiber prices because they are based on the loop and interoffice studies that we have rejected elsewhere in this Order. As with subloops, we set our price for dark fiber at the average state rate.

¹⁹² Anglin Pref. Direct at 26-27.

¹⁹³ Id.

2. Other UNEs

a. Background

Other network elements studied and presented in Mr.

Anglin's October 10, 2000 testimony include:

- a DS-1 Standalone NID
- UNE "platforms" for providing local exchange service certain Centrex features
- testing of EELs (only non-recurring)
- Advanced Intelligent Network (AIN) elements
- Two-way trunking
- Customized routing, and
- branded/unbranded announcements (only non-recurring)

b. Positions of the Parties

The cost development for each network element is described in Mr. Anglin's testimony and the associated cost workpapers.¹⁹⁴ No party filed testimony in opposition to these cost elements.

c. Analysis

In this section we address the recurring charge for miscellaneous items. The non-recurring charges are addressed elsewhere in this order.

¹⁹⁴ Anglin Pref. Dir. at 22-41.

i. Centrex Features and Coin Port Platform

Verizon's Centrex feature and Coin Port

Platform studies are based on investment estimates obtained from SCIS.¹⁹⁵ We have found elsewhere in this Order that SCIS provides unreliable cost estimates. We have elected to rely on the FCC's switching inputs to estimate the cost of digital switching in Maine. The FCC's switching input values were derived from data that included the total cost of switching machines. Included in the total cost was the expense of providing all features, functions and capabilities that reside in the switch. Whereas we have included the total cost of the switch in the development of the port and usage rates, we set a zero price for features in order to avoid a double recovery of costs. Our finding is consistent with the FCC's statement that "when a requesting carrier purchases the unbundled local switching element, it obtains all switching features in a single element on a per-line basis."¹⁹⁶

ii. DS-1 Standalone NID, Advanced Intelligent Network (AIN) elements, Two-Way Trunking, Customized Routing of OS/DA for Resale

Verizon's proposed recurring rates for the

above mentioned items are rejected because they are based on Verizon's

¹⁹⁵ Anglin Pref. Dir., work papers, Part H, workpaper, page 2 of 2 and Part G, workpaper, page 14 of 14.

¹⁹⁶ The 'features, functions, and capabilities' of the local switch include the basic switching function of connecting lines to lines, lines to trunks, trunks to lines, trunks to trunks. It also includes the same basic capabilities that are available to the incumbent LEC's customers, such as a telephone number, directory listing, dial tone, signaling, and access to 911, operator services, and directory assistance.[footnote omitted] In addition, the local switching element includes all vertical features that the switch is capable of providing, including custom calling, CLASS features, and Centrex, as well as any technically feasible customized routing functions. Thus, when a requesting carrier purchases the unbundled local switching element, it obtains all switching features in a single element on a per-line basis." LCO at ¶ 412.

assumptions regarding capital and common costs that we have rejected elsewhere herein.¹⁹⁷ Thus, we set our price for dark fiber at the average state rate.

3. UNE Combinations

a. Background

During the first round of hearings in this case, there was much argument regarding Verizon's position that it could not be required to combine UNEs for a CLEC nor provide CLECs with existing combinations of UNEs— Verizon contended it's sole obligation was to provide the individual UNEs. AT&T alleged that under both the TelAct and Maine law, we had authority to order Verizon to provide combinations of UNEs, forbid Verizon from dismembering existing UNE combinations, and forbid Verizon from requiring CLECs to collocate in order to purchase UNE combinations. The arguments centered on the parties' interpretation of *Iowa I* and were briefed extensively by both parties.

Since that time, there have been two relevant court decisions on the topic. In *Iowa II*, the Supreme Court reinstated 47 C.F.R. §315(b), which prohibits ILECs from separating UNEs that are already combined before leasing them to CLECs. Thus, there is no question that Verizon must refrain from separating requested network elements that are already combined. Mr. Anglin's testimony from the fall of 2000 reflects the *Iowa II* decision by including recurring and non-recurring rates for UNE-P and EELs.

¹⁹⁷ See, for example, Anglin Pref. Dir., Workpapers, Part D, page 1-3.

In *Iowa II*, the Supreme Court did not address the FCC rules requiring ILECs to combine elements not currently combined in the ILEC's network, 47 C.F.R. §315 (c)-(f). In *Iowa III*, when the Eighth Circuit revisited its decision pursuant to Supreme Court direction, it re-affirmed its decision to vacate §§ 315(c)-(f). The Eighth Circuit found that §251(c)(3) of the TelAct clearly contemplated CLECs, not ILECs, combining network elements for the CLECs' use. The Court noted that §251(c)(3) states, in part, "An incumbent local exchange carrier shall provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunication services."¹⁹⁸ Thus, the Eighth Circuit has eliminated any federal requirement that Verizon combine elements not already combined.

b. Analysis

The question left open for this Commission is whether under state law we can and should require Verizon to combine additional UNEs. We think it best to resolve the second question first because our decision will obviate the need to reach a decision on the first. We find that, at this time, the record does not demonstrate a need for combined UNEs other than those already combined by Verizon, which include the UNE platform and EELs. The briefs that were filed in this matter back in 1998 were focused on the UNE-P and did not point to other specific combinations that were of interest to the CLECs. Given this lack of record and the passage of time, we do not find a basis for

¹⁹⁸ *Iowa III* at 759. (Emphasis added.)

requiring Verizon to provide combinations of UNEs beyond its federal requirements.

If, during a future proceeding, CLECs demonstrate the need for new combinations, we will address the question of whether we are preempted by federal law from ordering those new combinations.

With regard to the issue raised by Worldcom relating to Verizon's requirement that CLECs collocate in a specific central office before Verizon will provision UNEs, we find Verizon's position unreasonable and order Verizon to lift their requirement.

VII. NON-RECURRING COSTS

Non-recurring costs (NRCs) consist of the one-time costs incurred by Verizon to provide service to a specific CLEC customer through UNEs or interconnection. The costs associated with NRCs include labor and material costs related to Verizon's processing of a CLEC's order for specific UNEs or interconnection. A spreadsheet containing the NRC rates set in this proceeding can be found at Attachment C to this report.

A. Background

ILECs recover the forward-looking costs associated with provisioning UNEs and interconnection through a combination of recurring, and non-recurring (one-time) rates. Here, both Verizon and AT&T presented non-recurring costs models, both claiming that their model best estimates the TELRIC non-recurring costs. The major differences between the models presented

include: (1) different assumptions regarding the type of plant that will be used, i.e. copper or fiber; (2) different assumptions regarding the cross-connects that will be used; (3) different assumptions regarding the time needed to accomplish tasks; and (4) different assumptions regarding the type of equipment needed for transport and distribution. These differences in assumptions result in widely differing costs estimates. Our task is to review the reasonableness of all of the evidence and set non-recurring costs at the proper level under TELRIC.

B. Positions of the Parties

Verizon. Verizon claims that its NRC study is based on forward-looking estimates of the time required to perform non-recurring activities and that, where appropriate, it has reduced its current work times to account for future mechanization.¹⁹⁹ To calculate the costs of each of the work functions involved, Verizon identified the work necessary to install each UNE and multiplied the time estimates by the fully assigned labor rate (the direct payment to the worker, plus the appropriate loadings for benefits, supervision, taxes, insurance, etc.) The NRC for interconnecting a particular UNE is the sum of all the work function costs associated with that element.²⁰⁰ To develop the work times used in calculating NRCs, Verizon asked its subject matter experts (SMEs) to estimate the minimum, maximum, and most-likely time to complete each task. Where there was no actual operating experience by the SMEs, the SMEs relied on experience

¹⁹⁹Verizon Initial Br. at 46.

²⁰⁰Id. at 48.

in completing similar work for Verizon retail customers.²⁰¹ Verizon claims that many measures were taken to ensure the accuracy of the SME estimates. Verizon then calculated a weighted mean for each interviewee. These means were then averaged to obtain a single mean for each work function.²⁰²

Verizon claims that the LCO requires that TELRIC costs be calculated using the most efficient technology actually deployed in its network and, therefore, it was appropriate for Verizon to assume the presence of a loop technology format known as TR-008 because it reflects the vast majority of Verizon's loop architecture that will be in place in the foreseeable future. Essentially, Verizon's NRC study, unlike its recurring cost study, assumes there is copper cable in the feeder. Because of this assumption, Verizon's NRC study also assumes the need for manual cross-connects.

Verizon argues that it does not need to make the same assumptions in its recurring and non-recurring cost models in order to comply with TELRIC principles.²⁰³ Verizon claims that its recurring cost study reflects the technology that it will deploy for new, incremental installations but that its NRC study properly reflects the fact older technologies currently exist in Verizon's network and that they impact the NRCs associated with provisioning UNEs and interconnection.

²⁰¹ Id.

²⁰² Id.

²⁰³ Verizon Initial Br. at 55-56.

Verizon also proposes to recover through an NRC both the cost of installing and disconnecting the UNE. Verizon argues that the up-front recovery of non-recurring disconnect costs is standard practice in the telecommunications industry because once a service is disconnected, it is more difficult to recover these costs.²⁰⁴ Verizon also argues that it cannot predict if and when a CLEC could make the business decision to discontinue all of its local telephone services. In such a situation, Verizon believes that it will have difficulty recovering any disconnection costs it may not have recovered up-front at the time of installation.²⁰⁵

AT&T has proposed that the disconnection cost not be recovered from the CLEC until service is discontinued. Verizon points out that AT&T failed to offer any evidence that CLECs will behave differently in their remittance practices than Verizon's retail customers, nor does AT&T offer any explanation why there must be a change to this "standard" policy in a UNE environment. Furthermore, Verizon argues that the number of disconnect charges that are potentially affected is far larger for a single CLEC than for an individual retail customer.²⁰⁶ Verizon argues that permitting an up-front disconnect charge would not provide it with a permanent source of cost-free capital because such a suggestion ignores future inflation adjusted disconnection costs.²⁰⁷

²⁰⁴Verizon Reply Br. at 36.

²⁰⁵Bench. Exh. 130.

²⁰⁶Tr. G-187; Verizon Reply Br. at 36.

²⁰⁷Verizon Reply Br. at 37.

With regard to AT&T's proposed NRC model, Verizon claims that AT&T's assumptions relating to TR-303 technology and electronically linked OSSs are inappropriate for a NRC study of UNEs.²⁰⁸ Verizon states that it does not currently deploy TR-303 technology in Maine and that the technology was designed for use by a single carrier and not for a multiple carrier environment.

Verizon claims that AT&T's NRC model incorporates inappropriately high assumptions relating to the level of electronic flow-through of orders. The term flow-through refers to the need for a person to become manually involved in implementing an order. If the flow-through is 100%, no human intervention is required and all tasks are implemented by various computer systems. Consequently, the higher the flow-through, the lower the cost of implementing the CLEC's order. Verizon claims that its 85% flow-through rate is more realistic than AT&T's 98% rate because it currently achieves 85% on its retail orders.

Verizon challenges AT&T's elimination of all costs associated with the Coordination Bureau – a Verizon division which ensures that CLEC facilities are working before the customer's service is disconnected. Verizon claims that this work is necessary to ensure that a customer is not put out of service and is critical to the efficient installation of new links, hot cuts, and CLEC-to-CLEC migrations.

Verizon also disagrees with AT&T's omission of costs associated with field cross connects. (AT&T assumes 100% dedicated outside plant which eliminates the need for field cross connects.) Verizon claims that under limited

²⁰⁸Verizon Initial Br. at 67.

circumstances, Verizon must dispatch a technician to perform a cross connect at the Feeder Distribution Interface or a similar cross connect box. According to Verizon, AT&T improperly ignores Verizon's current network design where distribution pairs exceed the number of feeder pairs. Verizon claims that field visits are sometimes required because a connection must be made in the field between the feeder and distribution plant. Verizon claims that its current design allows for more efficient administration of facilities.²⁰⁹

Finally, Verizon claims that AT&T's work estimates must be inaccurate because they vary so substantially from Verizon's estimates and because they are not supported by any rationale or documentation.

AT&T. AT&T urges the Commission to reject Verizon's NRC study because it does not comply with the TELRIC standard and to adopt AT&T's NRC model. AT&T argues that the FCC's TELRIC standard requires that the methodology and assumptions used to set NRCs must be consistent with those used to calculate recurring charges and that the Commission must assume that UNEs and UNE combinations will be provided in the most efficient manner possible. AT&T claims that Verizon's NRC study violates both of these requirements. In addition, AT&T argues that Verizon assumes an excessive fallout rate for service order processing, proposes needless coordination costs, and has not met its burden of proving that its estimated work times are reasonable.

²⁰⁹Verizon Initial Br. at 72.

First, AT&T points out that Verizon used different assumptions in calculating NRCs and recurring costs. Specifically, when calculating recurring costs, Verizon assumed an all fiber feeder network while for NRCs it assumed copper feeder.²¹⁰ AT&T argues that in the long run, an efficient LEC would maximize the use of its electronic interfaces so that wherever possible UNEs could be provisioned without needing to dispatch a technician to do manual wiring.²¹¹ AT&T claims that Verizon ignores this principle by assuming an embedded network in which every UNE order requires physical provisioning. Finally, AT&T refers the Commission to decisions made in New York and Massachusetts in similar proceedings which reject Verizon's use of inconsistent assumptions.²¹²

Second, AT&T's criticizes the Verizon NRC study for its failure to incorporate Next Generation Digital Loop Carrier that complies with the TR-303 standard. AT&T claims that the availability of the TR-303 technology has "profound implications" for the appropriate NRCs and that Verizon has recently submitted cost studies in New York that assume 100% TR-303 deployment.²¹³ AT&T refers to testimony given in New York where a Verizon witness conceded that TR-303 would allow electronic provisioning of UNE loops and UNE-P which would eliminate many of the NRCs in Verizon's study. AT&T states that Verizon's position that TR-303 technology should not be used in its model

²¹⁰AT&T Initial Br. at 56.

²¹¹Id. at 57.

²¹²Id. at 58.

²¹³AT&T Initial Br. at 59.

because it is not yet used in Maine is inconsistent with positions taken by Verizon in other states and has been rejected by New York and Vermont. AT&T urges the Commission to adopt its model which assumes copper feeder for loops of less than 9,000 feet and TR-303-compliant fiber for longer loop lengths.

Next, AT&T notes that Verizon includes in its NRCs both the cost of connection and the future cost of disconnection. AT&T claims that this is improper and creates barriers to entry.²¹⁴ AT&T urges the Commission to adopt its model which establishes separate charges and requires disconnection charges to be paid at the time of disconnection.²¹⁵ AT&T points out that this would be consistent with the determination of the Vermont PSB when considering the same proposal.²¹⁶ According to AT&T, charging a CLEC a disconnect fee when ordering UNEs differs substantially from Verizon charging a retail customer an upfront disconnect fee because, “unlike the retail customer, from whom a disconnect fee may be very difficult to collect, CLECs will not disappear and can be charged for any reasonable and appropriate disconnect fee at the time it is incurred.”²¹⁷ Furthermore, AT&T argues that permitting the upfront disconnect fee that would provide Verizon a permanent source of cost-free capital at the expense of its competitors.²¹⁸

²¹⁴Triola Pref. Dir. at 24; Selwyn Pref. Surr. at 16, 21-25.

²¹⁵Selwyn Pref. Surr. at 25.

²¹⁶AT&T Initial Br. at 60 *citing* Vermont Phase II Order at 82.

²¹⁷ Selwyn Pref. Surr. at 19-20.

²¹⁸Id. at 23-24.

AT&T claims that by assuming 15% of all UNE orders will require manual handling, Verizon's NRC study fails to recognize that Verizon will interact with its wholesale customers electronically. AT&T argues that efficient, well-functioning OSSs should generate a much smaller fallout rate and that Massachusetts has adopted AT&T's proposed fallout rate of 2%.²¹⁹ AT&T points to a 99% flow-through rate by Southwestern Bell as support for the reasonableness of its proposed 2% rate.

AT&T also claims that Verizon improperly seeks to charge a coordination charge on every order for an unbundled loop or switching.²²⁰ AT&T points to a Massachusetts finding that coordination charges are improper for all orders processed electronically.²²¹ AT&T's NRC model assumes Verizon will deploy technology that uses electronic interfaces to minimize manual activities and thus avoid the need for coordination charges.

Finally, AT&T argues that Verizon's work-time estimates are unreliable and should be rejected by the Commission.²²² AT&T points to decisions in Massachusetts, New York, and Vermont which found serious flaws in the methodologies used by Verizon to estimate work times.²²³ AT&T describes four specific problems with Verizon's study. First, Verizon did not estimate the

²¹⁹AT&T Initial Br. at p. 64.

²²⁰Id. at 65.

²²¹Id. (citing Massachusetts DTE Consolidated Arbitrations Docket, Phase 4-1, Order, (Oct. 14, 1999) at 30.

²²²AT&T Initial Br. at 68.

²²³Id.

time to perform individual tasks but instead aggregated the estimate for the whole work group involved.²²⁴ AT&T argues that this introduces bias and error because the estimators may have been making widely differing assumptions about the specific functions needed to provision a particular UNE and because the estimators were told that the estimates would be used in charges that competitors would pay. Second, AT&T argues that the estimates come from too small of a sample and were too wide-ranging to be accurate; Verizon relied on single-respondent estimates and failed to eliminate obvious outliers in the data.²²⁵ Third, AT&T claims that Verizon arbitrarily weighted the individual time estimates, providing no support its weighting factors.²²⁶ Finally, AT&T claims that Verizon grossly overestimated the time to perform manual cross connects in the central office.²²⁷

Thus, AT&T argues that Verizon's proposed costs must be rejected and that the Commission should adopt AT&T's proposals. AT&T notes that Vermont has adopted AT&T's model. AT&T claims that its model is completely open and that: (1) all the underlying assumptions have been explained; (2) it complies with TELRIC by excluding all OSS costs related to ongoing efficiency improvements that will benefit Verizon and will be recovered in recurring rates; (3) separates connection and disconnection charges; and (4) accurate estimates the work times associated with tasks.

²²⁴Id. at 69.

²²⁵Id. at 70.

²²⁶Id. at 71.

²²⁷Id. at 72.

C. Analysis

1. Models.

The first decision we must make is which model or cost study to use for purposes of calculating NRCs. While we agree with many of the criticisms AT&T has made of Verizon's model, we do not believe that AT&T's model is any more suitable than Verizon's. Both contain inconsistent assumptions regarding the technology used in the network, both contain unreasonable and unreliable work time estimates, and both make unreasonable assumptions regarding fallout rates for Verizon's OSS. Given that we have decided to use Verizon's cost study as the basis for calculating recurring costs, we will also use Verizon's cost study as the basis for calculating non-recurring costs for consistency purposes. We believe such an approach is especially appropriate when both of the proposed approaches are equally flawed.

2. Inconsistent assumptions between recurring and non-recurring cost studies.

We agree with AT&T that Verizon should not be allowed to use widely differing assumptions regarding the make-up of the network in calculating non-recurring costs then when calculating recurring costs. However, we also agree with Verizon that AT&T's position is equally inconsistent. Simply stated, when calculating recurring costs, Verizon chose to assume an all fiber network because it resulted in higher charges while AT&T assumed a fiber/copper crossover because it resulted in lower charges; for non-recurring costs. Both Verizon and AT&T switched their assumptions in order to develop charges that support their positions, i.e., Verizon wanted higher charges and

AT&T wanted lower charges. The transparency of the arguments and assumptions borders on embarrassing.

Because we found in section V, B1 above that a TELRIC-compliant network would contain a mixture of copper and fiber, we accept Verizon's NRC assumptions relating to network make-up. We reject AT&T's assumptions of an all fiber network for the same reasons discussed in the recurring cost section.

3. Work time estimates.

We agree with AT&T that the work time estimates contained in Verizon's cost study are unreasonable, unreliable, and inaccurate. Verizon's estimates rely too heavily on the subjective opinion of a very small sample of its own subject matter experts.²²⁸ Verizon failed to properly and clearly instruct its experts regarding all of the assumptions they were to make when estimating the labor times. Verizon also had the same people who made the estimates responsible for validating the estimates.²²⁹ Verizon also failed to account for instances where their own experts had to guess at the time involved because they had never conducted similar tasks on behalf of Verizon.

Under questioning from the bench, Verizon witness Baker admitted that Verizon did not take into account the impact of the learning curve associated with training employees to perform new tasks.²³⁰ Instead, Verizon

²²⁸Tr. H-83 (Baker).

²²⁹*Id.* at 125.

²³⁰Tr. H-119 (Baker).

relied upon estimates from employees who had never done the work before or who were just learning how to do the work. He also admitted that Verizon did not take many steps to address the problems associated with group dynamics when gathering the estimates.²³¹

AT&T's work estimates were not any more reliable. AT&T followed a very similar methodology in gathering data for the estimates.²³² AT&T's experts knew they were making estimates of charges that would be assessed to AT&T.²³³ AT&T told its SMEs to assume a 100% fiber network and a 2% flow-through rate – assumptions with which we disagree.²³⁴ Finally, AT&T admitted that fallout rates in other jurisdictions were not at the 2% level it had proposed.²³⁵

Much time has passed since Verizon initially filed this cost study. Verizon and its personnel have more experience in handling CLEC orders and should be able to provide more accurate estimates of the time needed for various tasks. Verizon personnel should also be able to process orders more quickly because they are now familiar with the operating systems and procedures. Thus, the preferable approach to setting rates would be to have Verizon re-do its NRC study, and, as part of that process, complete a new survey for estimates. (Indeed, in any future TELRIC study, Verizon should abide by the

²³¹ Id. at 117.

²³² Tr. at H-205 (Recker/Ordoover).

²³³ Id.

²³⁴ Id. at 207.

²³⁵ Id. at 208.

findings made in this Order and conduct an updated survey of labor times.)

Current constraints, however, require us to set NRCs without the benefit of a new cost study. Instead we, like other state commissions, will ameliorate the likely upward bias in the study by establishing rates below those proposed by Verizon.

We will look to a decision by the New York Commission who made similar findings regarding the unreliability of Verizon's work time estimates for guidance on how to quantify the impact of the faulty estimates on the NRCs.²³⁶ As stated earlier, Verizon used a simple averaging technique to come up with the work time estimate for each task – there were not steps taken to address outlier data nor small samples. The New York Commission decided the best way to ameliorate the likely upward bias in the estimates was to alter the weighting scheme used by Verizon in deriving the work time estimates, i.e. replace the simple averaging technique with another approach. Thus, New York ordered Verizon to weight the survey estimates 100-0-0 (minimum time estimate-average time estimate-maximum time estimate), essentially requiring Verizon to use the lowest estimate given in the survey as the basis for calculating NRCs. When Verizon did this, it resulted in a 57% reduction in the associated NRCs. New York then ordered the same 57% reduction to all NRCs which were based upon the single estimate of one SME.²³⁷

²³⁶New York Public Service Commission, Opinion and Order in Phase 2, Consolidated Cases 95-C-0657, 94-C-000095, and 91-C-1174 (Dec. 22, 1997) (New York Phase 2) at 53.

²³⁷Id. Massachusetts took the same approach, requiring Verizon to base its NRCs on the minimum time estimates rather than an average. MDTE, Consolidated Arbitrations, Dockets 96-73/74, 96-75, 96-80/81, 96-83, 96-94, Phase 4-L (Nov. 26, 1999).

We find that the New York approach to be most appropriate given the circumstances of this case. First, we agree with New York that the methodologies used to gather the estimates suggest a very strong likelihood of upward bias. Second, we believe that it is more likely than not that Verizon personnel have become much more proficient at handling CLEC orders than they were back in 1996 when competition was first introduced. As Verizon often points out to the Commission, the New York Collaborative²³⁸ has made great progress in facilitating the refinement of the Verizon wholesale process and systems and thereby making the entire process more efficient for all parties. Some of the efficiency gain must be attributable to the benefits of increased speed and accuracy in placing and processing orders due to the increase in actual experience with placing and processing orders.

Thus, we find that relying on the lowest estimates given over four years ago will lead to more accurate calculation of NRCs. We also adopt the finding from New York that the change in weighting scheme effectuates a 57% reduction in NRCs.

4. Disconnection fees, coordination charges, and flow-through rates

We agree with AT&T that including disconnection charges with provisioning charges results in significant barriers to entry and cause CLECs unnecessary economic harm. Verizon has not adequately supported its claims that it will be unable to recover disconnect costs at the time of disconnection or that the up-front payment for disconnection will not result in cost free capital.

²³⁸ A working group put together by the New York PSC to work out issues related to competitive local service. The group includes representative of Verizon and many CLECs.

Verizon is essentially arguing that inflation will effectively cancel out any benefits the company may receive from collecting and controlling a pool of disconnection fees before any such orders are placed and expenses are incurred. This line of reasoning is far too speculative to rely upon in this Order.

Accordingly, in any future TELRIC filing Verizon must remove disconnection fees from its non-recurring charges for provisioning UNEs and establish a separate charge to be collected at the time a UNE is actually disconnected.

We also agree with AT&T that Verizon's assumption of an 85% flow through rate is unreasonable. Specifically, we find that Verizon has once again presented inconsistent positions. It argues that it has developed modern operational support systems (OSS) for the sole purpose of processing CLEC orders. It claims that the systems are operational and that the majority of CLEC orders should flow through electronically and requires no manual intervention. If we were to accept these assertions, then we could not accept Verizon's assertion that manual interference is required 15% of the time. Verizon's assumption was unreasonable back in 1997 and has only become more unreasonable as time has passed and Verizon refined its wholesale processes.

Thus, we find, based upon the evidence before us in this case and our general knowledge of Verizon's wholesale operations, that a flow-through rate of 97% is appropriate at this point in time. If Verizon is not yet achieving this rate, we question whether that is because the types of orders

actually require manual assistance or because Verizon's personnel and systems have failed in some manner. In any future TELRIC filing where Verizon wishes to assume a lower rate of flow-through, it must provide clear evidence of the actual flow through rates achieved for its wholesale operations as well as support for why any lower flow-through rate is not the result of Verizon's actions or inactions.

We also agree with AT&T that many of the Coordination Bureau charges proposed by Verizon are unreasonable. Indeed, these charges are based upon Verizon's faulty assumption of a 85% flow-through rate. Thus, we, like the Massachusetts DTE, order Verizon in all future cost studies to eliminate all Coordination Bureau charges on all orders that are processed electronically, i.e. change the assumptions upon which the coordination charges are based to reflect a flow-through rate of 97%.

5. Combined NRC Discount

After considering each of the infirmities identified in this section and their impact on Verizon's proposed rates, we find that it is appropriate for Verizon to discount all of its NRCs by a factor of 65%. This factor must be applied to both the NRCs listed in the NRC spreadsheet as well as to any NRCs listed in the UNE spreadsheet.

VIII. COLLOCATION

A. Background

Collocation generally refers to the placement of a CLEC's equipment in an ILEC's facility for the purpose of interconnection and access to

UNEs. Physical collocation refers to the situation where the ILEC makes space available in its facility (usually a separate area) for placement of the necessary equipment and provides CLEC personnel access to the equipment. Virtual collocation refers to the situation where the CLEC purchases and installs the equipment in relay racks near the ILEC's similar equipment and transfers ownership of the equipment to the ILEC for a nominal amount; the ILEC then maintains the equipment at the direction of the collocating CLEC.

As with most of the issues addressed in this Order, both the FCC and the courts have spoken on this topic. Several decisions relate to the terms and conditions applicable to collocation and all support a state's ability to impose additional requirements above and beyond the federal requirements. While terms and conditions are not directly at issue in this proceeding, they obviously impact the cost of providing collocation.

With regard to the pricing of collocation, the LCO stated that collocation pricing should be consistent with the TELRIC methodology but did not provide any detailed pricing analysis of collocation. In June 1997, the FCC issued its Second Report and Order in the Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport matter.²³⁹ In this Report and Order, the FCC addressed many collocation pricing issues which arose from an investigation of ILEC collocation tariffs. Specifically, the FCC found that the

²³⁹ In the Matter of Local Exchange Carriers' Rates, Terms, and Conditions for Expanded Interconnection Through Physical Collocation for Special Access and Switched Transport, CC Docket No. 93-162 (June 9, 1997) (Collocation Order).

ILECs had failed to meet their burden of proving the reasonableness of many of their rates, terms, and conditions.²⁴⁰ The FCC required ILECs to modify their collocation tariffs in accordance with their Order.

There is also relevant state history on the issue of collocation. On May 28, 1999, Verizon filed a proposed collocation tariff.²⁴¹ In November 1999, the Commission requested comments on the proposed tariff from interested parties. Votts and AT&T filed comments. AT&T claimed that the tariff did not comply with the FCC's First Advanced Services Order. Specifically, AT&T objected to many of the terms and conditions but did not object to the prices. Votts claimed that the recurring rates, especially for power, were too high but asked the Commission to allow the tariff to go into effect and true up the rates later.

On February 28, 2000, the Commission issued an order allowing the tariff to go into effect. The Commission noted that pricing issues for collocation would be addressed in the TELRIC docket. Terms and conditions were to be reviewed in a separate investigation – which has never completed. Finally, the Commission stated that it would seek comment on the issue of retroactive rates. On March 14, 2000, the Hearing Examiner requested comments. On May 10, 2000, the Commission issued a Supplemental Order stating that because Votts had withdrawn its request, the Commission did not need to reach the issue on whether any pricing determinations in the TELRIC

²⁴⁰ *Id.* at ¶ 4.

²⁴¹ MPUC Docket No. 99-359.

case would apply retroactively to any monies paid under the state collocation tariff.

B. Positions of the Parties

Verizon. Verizon states that its cost analyses for physical collocation are forward-looking and consistent with TELRIC and relies upon the testimony of Robert Grenier.²⁴² Verizon's bases its cost estimates upon 1997 vendor prices for collocation projects in Massachusetts, investment data from Verizon engineers, and estimated labor times.²⁴³ In its Initial Brief, Verizon argues that we should adopt its proposed rates because no party has objected to the way collocation costs were calculated and that Massachusetts and Vermont have approved the same methodology.²⁴⁴

AT&T. AT&T has neither specific comments in its briefs regarding collocation nor any direct testimony on the issue.

C. Analysis

The ability of CLECs to collocate at rates, terms and conditions that are reasonable is essential to the development of local competition. However, the record on in this topic is very slim. Verizon's testimony supporting the pricing is less than 3 pages long. Verizon's brief makes bald assertions regarding compliance with TELRIC principles with little supporting information. Neither AT&T nor any of the other parties directly address the issue.

²⁴²Grenier Pref. Dir.

²⁴³*Id.* at 3.

²⁴⁴Verizon Initial Br. at 40.

During the hearings in this matter, the questioning from the bench focused upon the reasonableness of the time estimates Verizon used in calculating its rates. During the tariff review process, questions were raised by Vitts regarding the reasonableness of the way Verizon calculated DC power costs. We indicated then that we would consider Vitts' comments in this docket.

Given the lack of record on this topic, the Commission must do its best with the information at its disposal, which includes rates set by other states. Indeed, a comparison of the rates set by other states and those proposed by Verizon in Maine shows that Verizon-Maine's rates are almost always higher than the other states rates.' The degree of difference ranges from 3% to 200%. For example, the space conditioning rates for physical collocation in Maine are 5% higher than Vermont and 18% higher than Rhode Island. Maine rate is also higher than any of the Massachusetts rates, despite the fact that construction costs are usually 19% lower in Maine than in Massachusetts.²⁴⁵ For virtual collocation, the engineering costs for an initial site are 10% more than Vermont and 90% more than Massachusetts. Subsequent construction is 200% more than Massachusetts.

Of particular interest is the fact that power costs in Maine, an issue raised by Vitts in the collocation tariff review, are 42% higher than Vermont and 34-36% higher than Massachusetts and Rhode Island despite the fact that Maine's electric rates are similar to the rates in those states.

²⁴⁵2000 National Construction Estimator, edited by Dave Ogershok, Craftsman Book Company, p. 13.

We find that Verizon has failed to meet its burden of proof with regard to the collocation rates it has proposed in Maine. Verizon has not shown that its proposed rates are reasonable nor provided an adequate explanation of the process used to generate the cost estimates. Thus, we will adopt the state average rates as our collocation, except where the rate proposed by Verizon is lower than the average – in which case we will adopt the Verizon-proposed rate. With regard to our averaging calculations, for those rates where Massachusetts has deaveraged rates, we have only used the Rhode Island and Vermont rates in our average. For all others, the average reflects rates from all three states. A spreadsheet list all collocation rates adopted in this proceeding can be found at Attachment D.

As has been already noted in this Order, the cost studies at issue in this case are almost five years old. Much has happened in the interim, including the development of additional types of collocation arrangements. The cost studies before us today only address one type of collocation – physical collocation. We gave Verizon the opportunity to update its cost studies in the fall of 2000 but it failed to provide rates for the newer forms of collocation. Given Verizon's failure to update its filing, the need of CLECs for TELRIC-based collocation rates for all forms of collocation, and the time it will take to review new costs studies on the new forms of collocation, we believe it equitable in this situation for Verizon to adopt, on an interim basis, the average rates described above.

When Verizon files its new TELRIC costs studies, it should include rates for all forms of collocation, provide detailed support for all of its rates, and rely upon Maine-specific data.

IX. OSS

A. Background

Operational Support Systems (OSSs) consist of databases and information that a LEC uses to provide telecommunications services to its customers. Among the functions of OSS are preordering, ordering, provisioning, maintenance and repair, and billing.”²⁴⁶ The FCC has determined that an ILEC’s OSS “and the information they contain fall squarely within the definition of “network element” and must be unbundled upon request under section 251(c)(3).”²⁴⁷

Nondiscriminatory access to an ILEC’s OSS is an essential technical requirement for competitive entry in the local service market. Without such access, CLECs would not have a fair opportunity to establish or maintain a business relationship with its customers. Because OSSs are used almost constantly in the day-to-day operations of a telecommunications network, CLECs must have the opportunity to access an ILEC’s OSS at a fair price or competitive entry will be severely hampered. Therefore, the OSS rates adopted in this

²⁴⁶Muller, Nathan J. Desktop Encyclopedia of Telecommunications, Second Edition at page 651.

²⁴⁷LCO at ¶ 516.

proceeding will have a significant impact on a CLEC's cost of doing business and ultimately its decision to enter the local service market in Maine.

Verizon is seeking to recover, for its operations in Maine, a proportionate share of \$107.6 million in one-time OSS development costs and a proportionate share of \$19.97 million in ongoing maintenance and capital costs associated with implementing access to, and modifications of, its OSS for New York and New England.²⁴⁸ Verizon claims its efforts were limited to developing systems to facilitate access to Verizon's OSSs by CLECs, and to modifying existing systems to accommodate such access. According to Verizon, recovery is not being sought for improvements to the basic functioning of the underlying OSSs themselves.²⁴⁹ The primary factual issue to resolve in this section of the proceeding is the amount of OSS expenses that Verizon will be permitted to recover.

B. Positions of the Parties

Verizon. Verizon claims that the overall approach for OSS access and related development costs essentially took the identified expenses, loaded them for benefits and payroll taxes, and applied time-value factors to bring all amounts to 1996 equivalent dollars.²⁵⁰ The calculated costs for development and other one-time expenses for 1996 and 1997 were summed, yielding a total one-time OSS development and other costs of approximately \$108 million.²⁵¹

²⁴⁸Verizon Initial Br. at 74.

²⁴⁹Verizon Brief at 75.

²⁵⁰Minion Pref. Dir. at 18-20 and Attachment A, Workpapers I and II.

²⁵¹Verizon Initial Br. at 80.

The total ongoing costs associated with OSS access and functionalities are estimated by Verizon to be \$19.7 million annually.²⁵² The ongoing costs to provide OSS access allegedly reflect the annual system maintenance related to the development of new systems and modifications to existing systems, as well as the annual carrying cost of the capital investment needed to provide OSS access.²⁵³

Under Verizon's recovery proposal, it receives approximately \$108 million in OSS development costs through a combination of monthly recurring charges for resellers and UNE purchasers,²⁵⁴ and uniform per-transaction charges for all CLECs.²⁵⁵ Verizon's proposed recurring charges are \$4,993 per month for UNE purchasers, and \$2,606 per month for resellers. If a CLEC is both a UNE purchaser and reseller, Verizon proposes to charge that firm both monthly rates, or a total \$7,599 per month.²⁵⁶

Verizon's per-transaction charges were calculated in two components. The first component took the residual development costs remaining after determination of the recurring charges²⁵⁷ and divided them by anticipated demand for OSS transactions over a seven-year period. For the

²⁵²Minion Pref. Dir. at 20 and Attachment A, Workpapers III.

²⁵³Verizon Initial Br. at 80.

²⁵⁴The monthly charges represent \$23.862 million of a total \$107.601 million, as shown in Minion Pref. Dir., Attachment A, Workpaper II, page 2, line 12 plus line 17.

²⁵⁵ The uniform transaction charges represent \$83.905 million of a total \$107.601 million, as shown in Minion, Pref. Dir., Attachment A, Workpaper II, page 2, lines 4 and 18.

²⁵⁶Tr. Day G-195.

²⁵⁷This is the \$83.905 million referred to in footnote 249.

second component, annual ongoing capital, system, and hardware maintenance costs (roughly \$20 million) were divided by the transaction demand expected in the fifth year, in order to approximate the steady-state relationships. These two components were added together to form the per-transaction charge of \$1.25 for the first seven years.²⁵⁸ After seven years only the second component of the charge or \$0.41 will remain.²⁵⁹

Verizon's proposal attempts to account for the fact that its recovery mechanism is based upon demand forecasts over a seven-year period. To prevent over or under recovery of total development costs, Verizon proposes to track total OSS revenues so that once all allowable developmental costs have been recovered, the portion of the rate elements that recover one-time system development costs can be eliminated. In addition, the tracking mechanism will enable mid-course rate adjustments to be made, thereby permitting recovery of total development costs to be spread throughout the recovery period.²⁶⁰

According to Verizon, the cost it incurred to modify its OSS should be recovered directly from those carriers that purchase access to OSS UNEs; that is, from CLECs and resellers only. Verizon believes that recovery from these new entrants is appropriate because the TelAct and the FCC's LCO require UNE cost recovery directly from the competing carriers.²⁶¹

²⁵⁸The combined charge (\$1.25) is the result of adding component 1 (\$0.84) and component 2 (\$0.41).

²⁵⁹The ongoing charge of \$0.41 reflects that the development based transaction charge of \$0.84 has been retired. Verizon Initial Br. at 86. See also Orosz Pref. Dir., Workpaper Part I.

²⁶⁰Verizon Initial Br. at 87.

²⁶¹Verizon Initial Br. at 89.

Verizon maintains that its rate structure is fair, reasonable, and in accord with cost-causation principles. Verizon argues that the principle of cost causation requires that costs should be borne by the entities that cause the costs. Therefore, because resellers and UNE purchasers who will be competing against Verizon are the sole beneficiaries and the sole cost causers of Verizon's OSS expenditures, it is appropriate that these expenses be recovered solely from the CLECs. According to Verizon, neither the new OSS systems nor the modifications to existing OSS would have been made absent the TelAct. Furthermore, Verizon claims that none of the OSS development efforts enhanced its existing OSS in any respect; nor will the company use the new systems in connection with any of its own retail operations.²⁶²

AT&T. According to AT&T, Verizon has submitted essentially the same generic proposal to recover OSS costs in all Bell Atlantic-North states. AT&T avers that Verizon's proposal has not been accepted in any of the other states and has been explicitly rejected in New York, Massachusetts, and Vermont. "Given the rejection of the study in New York, Massachusetts, and Vermont, and the acknowledgement by the Verizon witnesses that its implementation in Maine could impose all of Verizon's region-wide OSS costs on the CLECs operating in this state,²⁶³ it appears Verizon itself views the OSS

²⁶²Verizon Initial Br. at 90.

²⁶³Tr. G-152 (Kelly).

recovery request as little more than a placeholder.”²⁶⁴ AT&T urges us to also reject Verizon’s proposal.

AT&T claims that Verizon has failed to follow the FCC’s TELRIC methodology because its OSS costs are neither forward-looking nor representative of the most efficient technology. AT&T maintains that the “OSS charges proposed by Verizon are intended to recover certain 1996 and 1997 costs that already have been fully expensed and recovered through past retail rates.”²⁶⁵ AT&T also claims that Verizon’s model includes more manual intervention than is necessary in currently available industry models.²⁶⁶

AT&T faults Verizon’s study for not considering the impact of merger savings on its OSS costs. According to AT&T, because the OSS developed by Bell Atlantic-North is also utilized by Bell Atlantic-South there should be a downward adjustment to the proposed OSS rates in Maine so that Verizon’s OSS costs are not recovered only from Bell Atlantic-North states.²⁶⁷

AT&T also argues that Verizon has not met its burden of establishing that the OSS costs it seeks to recover go beyond the ordinary upgrades and modifications that Verizon incurs every year and recovers in its retail rates.²⁶⁸ AT&T claims that the OSS costs at issue here have already been “expensed for financial reporting purposes in the same manner as historic OSS

²⁶⁴ AT&T Initial Br. at 73.

²⁶⁵ AT&T Initial Br. at 75 *citing* AT&T Exh. 11, Kelly Tr. 12/17/97 at 20.

²⁶⁶ AT&T Brief at 76.

²⁶⁷ AT&T Brief at 77.

²⁶⁸ AT&T Initial Br. at 78.

expenditures and were not treated for accounting purposes as a regulatory asset.”²⁶⁹ AT&T maintains that these expenditures have already been recovered through Verizon’s retail rates²⁷⁰ and are also reflected in other UNE rates proposed by Verizon in this proceeding.²⁷¹

AT&T disputes Verizon’s proposal to use transaction charges to recover non-transaction based expenses. AT&T believes that Verizon should not be permitted to recover one time OSS transition costs through transaction charges because such a rate design would create an improper barrier to entry into the local service market.²⁷² AT&T also disputes Verizon’s proposal “to recover \$19.7 million in annual ongoing system maintenance and capital investment costs through per transaction charges of \$0.41.”²⁷³ AT&T argues that this charge, which is a result of a 15 percent maintenance factor applied to Verizon’s total claimed OSS development costs, is arbitrary and unsupported by the record. AT&T argues that the only per-transaction OSS-related costs that could be justified would be 1.4 cents for computer processing time needed to complete a transaction, and 0.0104 cents for the cost of storing transaction data.²⁷⁴

²⁶⁹Id. at 79.

²⁷⁰Id.

²⁷¹Id.

²⁷²Id. at 80.

²⁷³Orosz Pref. Supp. Dir, WP Part I; Orosz Pref. Dir. at 5.

²⁷⁴AT&T Initial Br. at 82.

AT&T argues that Verizon should not be permitted to recover its claimed OSS costs solely from its competitors. AT&T believes that “because Congress mandated local competition for the benefit of end users, in order that the end users see lower prices, better quality and more choices, the principle of cost causation dictates that the end users of all carriers – including Verizon – should ultimately bear competition onset costs.”²⁷⁵ Furthermore, AT&T claims that the substantial monthly and transaction OSS charges proposed by Verizon’s cost recovery mechanism would not allow CLECs a fair opportunity to compete in the local service market.²⁷⁶

Finally, AT&T finds fault with Verizon’s recovery proposal because it is designed to collect all development costs identified in the Verizon OSS study within seven years. Accordingly, if demand for service by competitors is lower than Verizon’s forecast, the OSS charges will have to be increased to guarantee recovery in the specified time period. Therefore, the tradeoff between demand and OSS rates could result in a reduced amount of competition as OSS charges increase dramatically to recover residual costs from a decreasing number of CLECs.²⁷⁷

Verizon Rebuttal. Verizon responds to AT&T’s criticism by repeating the claim that its OSS study complies with TELRIC principles. Verizon also claims that it would be incorrect to include potential merger savings in this

²⁷⁵Ordoover Pref. Reb. at 38; AT&T Initial Br. at 84.

²⁷⁶AT&T Initial Br. at 85.

²⁷⁷AT&T Initial Br. at 86.

study because such savings are too speculative.²⁷⁸ Verizon refers to the testimony of Dr. Taylor to support its proposal to recover ongoing maintenance and transaction charges.²⁷⁹ According to Verizon economic theory and cost-causation principles dictate that the entity that causes additional costs – in this case, the costs to provide CLEC access to Verizon ME’s OSSs – should bear those additional costs. Therefore, charging OSS UNE users on a per-transaction basis is the fairest way to ensure that the cost causer pays its fair share.²⁸⁰ According to Verizon its proposed OSS rates do not present an entry barrier in the local service market. Rather, these rates simply require competitors to pay costs that have been incurred on their behalf as required by Section 252 of the 1996 Act.

C. Analysis

After considering the arguments and evidence presented by the parties in this proceeding, we conclude that it is not possible to establish UNE rates for access to Verizon’s OSS at this time. Based upon the record evidence, it is apparent that Verizon has failed in its attempt to present a clear and coherent study justifying the expenditures that have resulted from providing CLECs access to its OSS. In short:

- (1) Verizon has failed to properly separate and document historic and forward-looking OSS expenses.²⁸¹ This has made it difficult to

²⁷⁸Verizon Reply Br. at 42.

²⁷⁹Taylor Pref. Reb. at 4.

²⁸⁰Verizon Reply Br. at 44.

²⁸¹Minion Pref. Dir. at 6

verify claimed expenses and introduced the likelihood of improper and/or double recovery of some costs.

- (2) Verizon's region-wide study methodology and recovery proposal are inappropriate because they could result in a disproportionate share of total company OSS costs to be borne by consumers in Maine.²⁸²
- (3) Verizon's proposed recovery method and rate structure are inappropriate as they are anticompetitive. The significant recurring monthly rates proposed by the company erect an entry barrier for all LECs who wish to enter the local service market in Maine.

Given these infirmities, we cannot allow Verizon to recover OSS costs in this proceeding. To the extent Verizon wants to pursue recovery of these costs, we provide guidance regarding the showings that must be made, the parties from whom the costs may be recovered, and the type of proceeding in which the costs may be recovered.

First, Verizon should present a well documented list of expenses that separates the historic costs incurred to allow CLEC to access its OSS (i.e. development costs) from the forward-looking costs it expects to incur as a result of CLECs placing UNE and resale orders (i.e. transaction costs). Such costs must be separated so that cost recovery can be achieved in the appropriate forums. While we agree with Verizon that it should be compensated for all reasonable expenses incurred as a result of compliance with the TelAct, we do

²⁸² AT&T Initial Br. at 73 citing Kelly, Tr. 1/20/98 at 152.

not believe that the recovery of historic OSS development costs should be carried out entirely within a TELRIC proceeding. The historic nature Verizon's OSS development costs clearly do not meet the forward-looking requirement of TELRIC.

Our position is consistent with the decision reached by the Massachusetts DTE when considering a similar Verizon proposal in 1999. As referenced by AT&T in its Reply Brief, the MDTE stated:

Bell Atlantic misconstrues our obligations under the Act and the FCC rules. The pricing of UNEs, per the TELRIC method, is not an exercise in cost recovery. Its purpose, as stated by the FCC, is to provide an estimate of forward-looking costs of a hypothetical telecommunications network using efficient technology to serve current and reasonably expected levels of demand and customers, assuming the same geographic distribution of central offices as are currently in place. Local Competition Order at ¶ 685; Phase 4 Order at 14-15. Bell Atlantic has clearly included historic costs in its OSS pricing. A TELRIC proceeding is not the place to enable or ensure that an incumbent local exchange carrier recovers its historic costs. To the extent that our ruling in this case does not permit Bell Atlantic to include in UNE rates the number of dollars it asserts are properly the result of exogenous factors -- like the Act and the FCC rules -- its forum for attempted recovery of those costs is the annual price cap filing.”²⁸³

We also do not believe that the recovery of OSS development costs should be the sole responsibility of the CLECs. While reasonable arguments can be made regarding who caused these costs to be incurred, it is the consumer who will benefit from a competitive telecommunications market and ultimately consumers that will be left to pay the bill. Therefore, it is appropriate that

²⁸³ MDTE *Consolidated Arbitrations* Docket Phase 4-L Order of 10/14/99 at 46.

Verizon's approved OSS development costs should be recovered from all local exchange carriers in a competitively neutral manner by allocating total approved development costs on a per line basis for all carriers over a period of five years.²⁸⁴ To accomplish this goal, CLECs should be assessed an annual charge for five years based upon the proportional share of lines that they serve. This annual fee should be paid to Verizon as compensation for OSS development costs and be completely separate from any transaction based charges.

If Verizon wishes to recover its proportional share of these costs from its customers, it should request that these costs be treated as an exogenous event as part of Alternate Form of Regulation proceedings within the same time period. After five years, the development cost recovery period will have ended and any exogenous OSS development charge should be eliminated. After this same period of time, the CLECs will also be relieved of any responsibility for initial OSS development cost recovery.²⁸⁵

The recovery method and time period chosen here should alleviate concerns about Verizon's recovery method being anticompetitive and erecting increasingly formidable entry barriers even if Verizon has overestimated CLEC demand in the local service market.²⁸⁶ While this may be contrary to Verizon's

²⁸⁴This is not to say that the level of OSS development costs presented by Verizon has been judged to be reasonable. This is clearly not the case; rather, the level of reasonable OSS development costs will have to be determined by the commission in a later proceeding.

²⁸⁵In the event of future OSS upgrades necessary to comply with the TelAct, Verizon will have to submit a serial request to the commission for the recovery of the additional OSS development costs.

²⁸⁶AT&T Initial Br. at 85.

original proposals, it will in the end benefit Verizon as it ultimately ensures that the company is compensated for its reasonably incurred expenses.²⁸⁷

Second, in its filings Verizon must be prepared to show that the OSS expenses it is seeking to recover are reasonable when judged relative to other carriers that have modified their OSS to comply with the TelAct.²⁸⁸ Furthermore, Verizon must demonstrate that these costs are truly exogenous. That is, the expenses in question must be independent of previously recovered OSS costs, must not have resulted in any operational or financial benefit to Verizon, and would not have been incurred if not for the TelAct and the unbundling requirements of the FCC. Verizon must bear in mind that the burden of proof in this proceeding rests solely upon Verizon.

Third, in filing a cost study to recover transaction-based OSS charges, Verizon must be sure that its study accounts only for transaction based expenses,²⁸⁹ employs a methodology that is forward-looking, and assumes the most efficient technology available. The record indicates that the methodology chosen by Verizon to assess annual ongoing system maintenance and capital

²⁸⁷ Consider the extreme example where there is no CLEC entry in Maine. In this situation, Verizon would not be able to recover any of the OSS costs it incurred to comply with the 1996 Act. Less drastically, if there were only a small amount of CLEC entry in Maine (less than forecasted), Verizon would still have difficulty recovering its costs within a reasonable period of time. This is because Verizon's original proposal requires OSS recovery rates to increase dramatically in order to maintain the recovery schedule. As these rates increase it is likely that fewer CLECs would enter, or continue to provide service in Maine.

²⁸⁸ For example, in the state of Washington, Verizon submitted evidence indicating that its OSS development costs totaled \$56.7 Million for the years 1996-1998. See In the Matter of the Continued Costing and Pricing of Unbundled Network Elements, Transport, and Termination Docket No. UT-003013 Thirteenth Supplemental Order; Part A, at 49, ¶156; Twenty Seventh Supplemental Order at ¶¶ 4-5.

²⁸⁹ This may include a reasonable amount of capital expenses.

investment costs through per transaction charges is a result of applying 15 percent maintenance factor to Verizon's total claimed OSS development costs. This factor is based purely upon the opinion of a Verizon SME and has already been rejected by the New York Public Service Commission.²⁹⁰ Similarly, we have no confidence in this factor for the State of Maine. Therefore, Verizon must either accurately estimate its forward looking OSS maintenance costs or provide better support for its proposed maintenance factor.²⁹¹ Furthermore, AT&T has presented convincing evidence that Verizon's current study fails to meet the forward-looking, efficient technology required by TELRIC because it includes more manual intervention than is necessary.²⁹²

Lastly, Verizon must show that the cost recovery it seeks will not result in consumers in Maine paying a disproportionate share of the OSS costs that have been incurred by Verizon throughout its service territory.

Whereas the amount of reasonably incurred development costs and forward-looking transaction costs are independent of Verizon's size and structure, it is not necessary for Verizon to make a specific adjustment to account for merger savings when filing subsequent OSS cost studies. Given the nature

²⁹⁰ See Minion Pref. Dir. and Tr. G -173.

²⁹¹ Although Verizon claims at page 45 of its Reply Brief that it has identified further evidence to support a 15% maintenance factor, the record indicates that this information was not supplied in this proceeding. Tr. G-173.

²⁹² AT&T Initial Br. at 76.

of the recommendations in this document, all such operational efficiencies should already have been captured by any study approved by the Commission.

Submitted by,

On behalf of the Advisory Staff

